

San Francisco Law Library

No. 123003

EXTRACT FROM BY-LAWS

Section 9. No book shall, at any time, be taken from the Library Room to any other place than to some court room of a Court of Record, State or Federal, in the City of San Francisco, or to the Chambers of a Judge of such Court of Record, and then only upon the accountable receipt of some person entitled to the use of the Library. Every such book so taken from the Library, shall be returned on the same day, and in default of such return the party taking the same shall be suspended from all use and privileges of the Library until the return of the book or full compensation is made therefor to the satisfaction of the Trustees.

Sec. 11. No books shall have the leaves folded down, or be marked, dog-eared, or otherwise soiled, defaced or injured. Any party violating this provision, shall be liable to pay a sum not exceeding the value of the book, or to replace the volume by a new one, at the discretion of the Trustees or Executive Committee, and shall be liable to be suspended from all use of the Library till any order of the Trustees or Executive Committee in the premises shall be fully complied with to the satisfaction of such Trustees or Executive Committee.

No. 10280

United States /
Circuit Court of Appeals

For the Ninth Circuit.

LYDELL PECK and ALLAN B. RUDDLE,

Appellants,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Appellees.

Transcript of Record

In Four Volumes

VOLUME I

Pages 1 to 495

Upon Appeal from the District Court of the United States
for the Northern District of California,
Southern Division

FILED

APR 13 1943

PAUL P. O'BRIEN,
CLERK

United States
Circuit Court of Appeals
For the Ninth Circuit.

LYDELL PECK and ALLAN B. RUDDLE,
Appellants,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,
Appellees.

Transcript of Record
In Four Volumes

VOLUME I
Pages 1 to 495

Upon Appeal from the District Court of the United States
for the Northern District of California,
Southern Division

INDEX

[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in italic the two words between which the omission seems to occur.]

	Page
Answer	166
Appeal:	
Bond on	193
Certificate of Clerk to Transcript of Record on	206
Designation of Contents of Record on, Appellants (DC)	198
Designation of Contents of Record on, Appellees (DC)	200
Notice of	193
Order re Original Depositions on.....	198
Orders Enlarging Time to Docket.....	196, 197
Statement of Points on Appeal, Appellants (CCA)	1531
Stipulation and Order re Transmission of Exhibits and Record on.....	201
Bond on Appeal.....	193
Certificate re Witnesses.....	192

Index	Page
Clerk's Certificate to Transcript of Record on Appeal	206
Complaint	2
Exhibits:	
B—Contract, Apr. 8, 1938, Ruddie and Peck with Shell Oil Co.....	16
C—Notice of Shell Oil Co. of Election to Continue Under Contract, Nov. 2, 1938.....	29
D—Copy of Letter of Shell Oil Co., July 26, 1939, Notifying Plaintiffs of Cancellation of Contract.....	30
E—Reply of Ruddie and Peck to Shell Oil Co., July 28, 1939.....	32
F—Letter, Aug. 18, 1939, Shell Oil Co. to Ruddie and Peck.....	33
F-1—Report of Shell Oil Co., TAC-79, Feb. 24, 1938.....	35
F-2—Report of Shell Oil Co., TAC-90, Mar. 22, 1938.....	44
F-3—Report of Shell Oil Co., R-168, June 14, 1938.....	55
F-4—Report of Shell Oil Co., TAC-226, June 30, 1938.....	59
F-5—Report of Shell Oil Co., TAC-227, June 30, 1938.....	65

Index

Page

Exhibits to Complaint (Continued):

F-6—Report of Shell Oil Co., TAC-228, July 1, 1938.....	69
F-7—Report of Shell Oil Co., R-175, July 26, 1938.....	78
F-8—Report of Shell Oil Co., TAC-290, Aug. 29, 1938.....	85
F-9—Report of Shell Oil Co., TAC-367, Oct. 27, 1938.....	108
F-10—Report of Shell Oil Co., TAC-462, Nov. 30, 1938.....	120
F-11—Report of Shell Oil Co., TAC-472, Dec. 15, 1938.....	131
F-12—Report of Shell Oil Co., TAC-561, Mar. 23, 1939.....	143
G—Letter, Sept. 6, 1939, Addressed to Shell Oil Co. from Lydell Peck and Allan B. Ruddell.....	157
H—Letter, Sept. 14, 1939, to Peck and Ruddell from Shell Oil Co.....	164
I—Letter, Sept. 20, 1939, to Shell Oil Co. from Ruddell and Peck.....	165
Defendants' Request for Admissions.....	180
Designation of Contents of Record on Appeal, Appellants (DC)	198

Index	Page
Designation of Contents of Record on Appeal, Appellees (DC)	200
Docket Entries	202
Findings of Fact and Conclusions of Law....	185
Judgment	188
Memorandum of Costs and Disbursements....	189
Minute Order for Judgment.....	184
Names and Addresses of Attorneys.....	1
Notice of Appeal.....	193
Order for Judgment.....	183
Orders Enlarging Time to Docket Appeal.196, 197	
Order re Original Depositions.....	198
Order re Transmission of Exhibits and Record	201
Request for Admissions, Defendants'.....	180
Satisfaction of Costs.....	196
Statement of Points on Appeal, Appellants (CCA)	1531
Stipulation and Order re Transmission of Ex- hibits and Record.....	201
Stipulation re Contents of Exhibit Book.....	1920
Stipulations re Use of Exhibits.....	1925, 1926
Substitution of Attorneys.....	179

Index	Page
Transcript of Testimony.....	208
Exhibits for Defendants:	
R—Letter, 12/9/38, Ruddle and Peck to Shell Oil Co.....	336
Set out at page.....	1769
T—Statement re Advantages of Core- Min-Oil	337
Set out at page.....	1770
W—Letter, 3/8/40, Shell Oil Co. to Ruddle and Peck.....	373
Set out at page.....	1772
X—Thomas Patent No. 1,561,956.....	381
Set out at page.....	1775
Y-1—Letter, Shell Oil Co. to Hackley, 12/1/39	462
Set out at page.....	1779
Z—Letter, Ruddle and Peck to Ameri- can Bitumuls Co., 12/17/37.....	516
Set out at page.....	1781
AA—Core Oil Survey, American Bitu- muls Co.	516
Set out at page.....	1783

Index	Page
Exhibits for Defendants (Continued):	
BB—Letter, Shell Oil Co. to Ruddle, 1/14/38	547
Set out at page.....	1793
CC—Inter-office Communication from Shell Head Office Sales to Shell Martinez Manufacturing, 1/6/25/38	550
Set out at page.....	1795
EE—Dietert Report “Cores Made for Foundry, Summary Sheet”.....	743
Set out at page.....	1797
GG—Inter-office Memo Sent to Zublin, 4/18/38	895
Set out at page.....	1799
HH—Notes Made by Zublin.....	811
Set out at page.....	1799
OO—Spiri’s First Report.....	824
Set out at page.....	1800
QQ—Spiri Report Dated 1/24/39.....	824
Set out at page.....	1817
RR—Spiri Report Dated 2/7/39.....	825
Set out at page.....	1836
SS—Spiri Report Dated 3/1/39.....	825
Set out at page.....	1846

Index

Page

Exhibits for Defendants (Continued):

TT—Spiri Report Dated 3/24/39.....	825
Set out at page.....	1851
UU—Spiri Report Dated 4/14/39.....	825
Set out at page.....	1865
VV—Spiri Report Dated 4/27/39.....	825
Set out at page.....	1874
WW—Spiri Report Dated 5/24/39.....	825
Set out at page.....	1880
XX—Spiri Report Dated 6/6/39.....	826
Set out at page.....	1901
AAA—Letter, 4/18/38, McSwain to Mar- tin of Vulcan Foundry.....	894
Set out at page.....	1914
BBB—Statement by Harbottle of Shell Costs	906
Set out at page.....	1916
CCC—Deposition of Lydell Peck.....	906
Set out at page.....	1496
DDD—Deposition of Allan B. Ruddle....	907
Set out at page.....	1159

	Index	Page
Exhibits for Plaintiffs:		
1—Ruddle Patent No. 2,193,346, Is- sued March 12, 1940.....		243
Set out at page.....		1541
2—Ruddle Patent No. 2,204,913, Is- sued June 18, 1940.....		244
Set out at page.....		1545
3—Shell Oil Report TAC 79.....		254
Set out at page.....		35
4—Shell Oil Report TAC 90.....		255
Set out at page.....		44
5—License Agreement, 4/8/38.....		263
Set out at page.....		16
6—Letter from “The Foundry”, Dated 11/26/37		280
Set out at page.....		1549
7—Royalty Memo of McSwain.....		296
Set out at page.....		1553
8—Ruddle Patent No. 2,214,349, Is- sued Sept. 10, 1940.....		296
Set out at page.....		1555
9—Letter, 11/2/38, Gratama to Hack- ley		297
Set out at page.....		29

Index

Page

Exhibits for Plaintiffs (Continued):

10—Letter, 7/26/39, McLaren to Ruddle	301
Set out at page.....	1563
11—Letter, Ruddle and Peck to McLaren	302
Set out at page.....	1565
12—Letter, McLaren to Ruddle and Peck, 8/18/39	303
Set out at page.....	1567
13—Shell Oil Report R-168.....	305
Set out at page.....	55
14—Shell Oil Report R-175.....	305
Set out at page.....	78
15—Shell Oil Report TAC 226.....	305
Set out at page.....	59
16—Shell Oil Report TAC 227.....	305
Set out at page.....	65
17—Shell Oil Report TAC 228.....	305
Set out at page.....	69
18—Shell Oil Report TAC 290.....	306
Set out at page.....	85

	Index	Page
Exhibits for Plaintiffs (Continued):		
19—Shell Oil Report TAC 367.....		306
Set out at page.....		108
20—Shell Oil Report TAC 472.....		306
Set out at page.....		131
21—Shell Oil Report TAC 561.....		306
Set out at page.....		143
22—Shell Oil Report TAC 462.....		306
Set out at page.....		120
23—Report by Spiri and Spotswood,		
Dated 8/7/39		307
Set out at page.....		1568
24—Letter, 9/6/39, Peck and Ruddle		
to Shell Oil Co.....		309
Set out at page.....		1599
25—Letter, 9/14/39, Shell Oil Co. to		
Peck and Ruddle.....		310
Set out at page.....		1606
26—Letter, 9/20/39, Peck and Ruddle		
to Shell Oil Co.....		310
Set out at page.....		1607
27—Memo, 9/17/36, Vulcan Foundry.		316
Set out at page.....		1609

Index

Page

Exhibits for Plaintiffs (Continued):

29—Notes Made by Ruddle.....	489
Set out at page.....	1612
30—Letter, Hackley to Ruddle, 3/15/38	495
Set out at page.....	1612
31—Patent Office Action of 1/27/38..	495
Set out at page.....	1614
32—Notes Made by Ruddle, 6/23/39..	506
Set out at page.....	1615
33—Notes Made by Ruddle, 7/19/39..	506
Set out at page.....	1624
35—Watson Patent 1,900,211.....	510
Set out at page.....	1631
36—Watson Patent 1,900,212.....	510
Set out at page.....	1635
37—Deposition of Arthur C. Waller.	621
Set out at page.....	913
38—Deposition of John F. McSwain.	526
Set out at page.....	1046

Exhibits:

1—Letter, 1/14/38, Shell Oil Co. to Ruddle.....	1061
--	------

Index

Page

Exhibits for Plaintiffs (Continued):

2—Letter, 11/26/37, “The Foundry”, to Peck.....	1082
3—Draft of License Agreement Between Lydell Peck and Allan Ruddle and Shell Oil Company, April 8, 1938	1099
4—Royalty Computation, by Floyd McSwain.....	1113
Set out at page.....	1553
45—Notes, Waller Exhibit 1.....	622
Set out.....	1641
46—Notes, Waller Exhibit 2.....	622
Set out.....	1643
53—Report of Dr. Wright “Methods of Producing Stable Bituminous”, etc.....	654
Set out at page.....	1648
54—Report of Dr. Wright, “Core Oil Mixtures”.....	654
Set out at page.....	1682
56—Pamphlet “Industrial Oven Notes, Young Bros., Detroit, January, 1927.....	765
Set out at page.....	1753

Index

Page

Exhibits for Plaintiffs (Continued):

57—Copy of Anderson Patent No. 2,201,466	815
Set out at page.....	1757

Witnesses for Defendants:

Dietert, Harry W.	
—direct	686, 714
—cross	749
Everson, William L.	
—direct	850
—cross	855
Harbottle, Robert B.	
—direct	904
McSwain, John F.	
—direct	533
—recalled, direct	894
—cross	898
Peck, Lydell (Deposition)	
—direct	1496
Ruddle, Allan B. (Deposition)	
—direct	1159
Spiri, W. H.	
—direct	817
—cross	840
—redirect	849

Index

Page

Witnesses for Defendants (Continued):

Waller, Arthur C.

—recalled, direct 891

—cross 893

Warren, Grant E.

—direct 796

—cross 802

Zublin, Ernest W.

—direct 807

—cross 813

Witnesses for Plaintiffs:

Anaclerio, Anthony

—direct 596

Goth, Otto William

—direct 566

—cross 590

Gratama, Bernard Jan

—direct 682

McSwain, John F.

—direct 673

—Deposition, direct.....1048, 1120

—cross1156

Ruddle, Allan B.

—direct 227

—cross 338

—redirect478, 517

—recross 513

—recalled, direct 611

Index

Page

Witnesses for Plaintiffs (Continued):

Spotswood, Earl Henry

—direct	623
—recalled, direct	856
—cross	865

Waller, Arthur C.

—direct	616
—Deposition, direct	914
—cross	1044

Wright, Kenneth A.

—direct	648
---------------	-----

NAMES AND ADDRESSES OF ATTORNEYS

MESSRS. HACKLEY & HURSH

Crocker Building
San Francisco, California

Attorneys for Plaintiffs and Appellants

CHAS. M. FRYER, Esq.,
ALFRED C. AURICH, Esq.,
HAROLD I. JOHNSON, Esq.,

1602 Mills Tower
San Francisco, California

Attorneys for Defendants and Appellees

In the United States District Court for the
Northern District of California,
Southern Division

Civil Action No. 21390-R

LYDELL PECK, and ALLAN B. RUDDLE,
Plaintiffs,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Defendants.

COMPLAINT

Come now plaintiffs above named, and for cause
of action allege:

I.

yes? That plaintiff Lydell Peck is a resident of the
City of Oakland, County of Alameda, State of
California; and that [1*] plaintiff Allan B. Ruddle
is a resident of the City and County of San Fran-
cisco, State of California.

II.

That defendant Shell Oil Company Incorporated
is a corporation organized and existing under the
laws of the Commonwealth of Virginia, and is a
citizen of the Commonwealth of Virginia; that said
defendant has a regular and established place of

*Page numbering appearing at foot of page of original certified
Transcript of Record.

business in the City and County of San Francisco, State of California, and that defendant is engaged in intrastate business in the State of California by reason of repeated and successive transactions. That defendant Shell Development Company is a corporation organized and existing under the laws of the State of Delaware; and that said defendant has a regular and established place of business in the City and County of San Francisco, State of California.

III.

That the jurisdiction of this court is based upon the diversity of citizenship of the parties to this cause, and on the fact that the matter in controversy exceeds, exclusive of interest and costs, the sum or value of Three Thousand Dollars (\$3,000).

IV.

That defendant Shell Oil Company, Incorporated, a Virginia corporation, was originally named "Shell Petroleum Corporation", and that said defendant, by an agreement of merger dated April 1, 1939, acquired all of the assets and liabilities of Shell Oil Company, a California corporation; that in support of the allegations of this paragraph there is annexed hereto, made a part hereof by this reference, and marked "Exhibit A", a certified copy of said Agreement of Merger between Shell Petroleum Corporation, a Virginia corporation, and Shell Oil Company, a California [2] corporation, dated March 27, 1939, effective April 1, 1939, together with certified copies of documents relating thereto.

V.

That prior to the month of January, 1938, plaintiffs, at great expense of time and money, developed a core oil, primarily designed for use in foundry work for the manufacture of casting cores, which said product was given the name by plaintiffs of "Core-Min-Oil". That following extensive laboratory work, development and testing of said "Core-Min-Oil", plaintiffs contacted defendant Shell Oil Company Incorporated, by communicating with said Shell Oil Company, a California corporation, subsequently merged into defendant Shell Oil Company Incorporated, for the purpose and with the intention of attempting to interest said Shell Oil Company in the further development, improvement, manufacture, distribution and sale of plaintiffs' said product for foundry use in the manner aforesaid, and for such other uses as from time to time might appear. That commencing about February 1, 1938, and after a confidential disclosure of said product and demonstration thereof to members of the executive personnel of Shell Oil Company, acting through its affiliated or subsidiary corporation, defendant Shell Development Company, over a period up to and including the latter part of March, 1938, said Shell Oil Company thoroughly investigated, analyzed and tested said "Core-Min-Oil", and verified the representations made by plaintiffs theretofore with regard thereto.

VI.

That upon completion of the testing and investi-

gating period aforesaid, Shell Oil Company, on or about April 1, 1938, submitted to plaintiffs a draft of a proposed contract, wherein and whereby, in substance, Shell Oil Company sought to obtain an [3] exclusive license to operate under three applications for United States Letters Patent theretofore filed by plaintiffs in the United States Patent Office. That after some revision, made at the instance of plaintiffs, said contract was placed in final form and duly executed by plaintiffs and by said Shell Oil Company, a California corporation, the predecessor in interest herein of defendant Shell Oil Company Incorporated, on April 8, 1938. A true copy of said contract is annexed hereto, made a part hereof by this reference, and marked "Exhibit B". *Profer* of an executed duplicate original of said contract Exhibit B is hereby made, the same to be offered in evidence in this proceeding at such time as this court may direct.

VII.

Thereafter, Shell Oil Company, a California corporation, continued working with plaintiffs and their representatives, both directly and through its said affiliate or subsidiary, defendant Shell Development Company, further to test and investigate the disclosures and representations of plaintiffs with reference to said product "Core-Min-Oil", and particularly to investigate the patent situation with regard to "Core-Min-Oil", and said pending applications of plaintiffs for United States Letters

Patent thereon or thereto pertaining; all pursuant to the terms of paragraph 22 of said contract Exhibit B hereto annexed, wherein and whereby said Shell Oil Company was allowed "up to six months from date of receiving copies of the present filed Ruddle applications to investigate the patent situation in regard to Core-Min-Oil."; said paragraph 22 further providing: "In the event Shell Oil considers the patent situation unsatisfactory at or before the end of said six months period, then Shell Oil may terminate this agreement forthwith."

Following the expiration of said six months period, and after three extensions thereof for periods of ten days each, [4] given by plaintiffs to said Shell Oil Company at the request the latter, said Shell Oil Company, under date of November 2, 1938, gave notice to plaintiffs of its election to continue under the terms and provisions of said contract Exhibit B annexed hereto. A true copy said notice, dated November 2, 1938, of election by Shell Oil Company to continue under said contract Exhibit B is hereto annexed, made a part hereof by this reference, and marked "Exhibit C".

VIII.

That following said notice Exhibit C hereto, and until April 1, 1939, said Shell Oil Company, a California corporation, proceeded ostensibly to perform the terms and conditions of said agreement Exhibit B hereto annexed, which said ostensible performance thereof was continued in the same manner

by Shell Oil Company Incorporated, one of the defendants herein, until July 26, 1939, when said defendant, over the signature of L. G. McLaren, its vice president, at San Francisco, California, notified plaintiffs of its election to cancel and terminate said agreement of April 8, 1938, forthwith, and stated that it did, by said letter of July 26, 1939, notify plaintiffs that said contract Exhibit B was "Canceled and terminated". A copy of said letter of July 26, 1939, from defendant Shell Oil Company Incorporated to plaintiffs is annexed hereto and marked "Exhibit D".

IX.

Promptly upon receipt of said letter Exhibit D annexed hereto, plaintiffs replied thereto in the manner set forth in a letter dated July 28, 1939, a copy whereof is hereto annexed, made a part hereof by this reference, and marked "Exhibit E", in which plaintiffs called attention to the fact that they regarded the letter of July 26, 1939, of Shell Oil Company Incorporated to be "of no force or effect", and wherein they stated further: "* * * we therefore stand squarely upon the agreement between your concern [5] and ourselves dated April 8, 1938, and consider the same to be in full force and effect." Whereupon plaintiffs demanded that said defendant "maintain said contract fully and faithfully in all respects."

X.

Subsequently, and on August 18, 1939, defendant

Shell Oil Company Incorporated wrote to plaintiffs a supplement to its letter of July 26, 1939, to which it annexed a group of so-called "reports", purporting to describe some of the activities of defendants and of Shell Oil Company, a California corporation, the merged predecessor in interest of defendant Shell Oil Company Incorporated, during the term of said contract Exhibit B and theretofore. A copy of said letter of defendant Shell Oil Company Incorporated to plaintiffs dated August 18, 1939, together with enclosures, is hereto annexed and marked "Exhibit F", the enclosures being marked respectively "Exhibit F-1" to "Exhibit F-13".

XI.

Thereupon, and in response to said letter Exhibit F hereto annexed, plaintiffs, on September 6, 1939, wrote to defendant Shell Oil Company, Incorporated, reaffirming the demand of plaintiffs that said defendant fully perform the conditions of the contract Exhibit B, and pointing out the fallacy of defendant's contentions, all as set forth in a copy of said letter of September 6, 1939, hereto annexed, made a part hereof by this reference, and marked "Exhibit G".

XII.

In response to said letter Exhibit G, defendant Shell Oil Company Incorporated wrote to plaintiffs under date of September 14, 1939, in the manner set forth in a copy of said letter hereto annexed and marked "Exhibit H", to which last mentioned letter

plaintiffs replied on September 20, 1939, as set forth in a copy of said reply hereto annexed, made a part hereof [6] by this reference, and marked "Exhibit I."

XIII.

That the correspondence between plaintiffs and defendant Shell Oil Company Incorporated closed with the letter of plaintiffs dated September 20, 1939, nothing further being received thereafter by plaintiffs from said defendant despite the fact that, in its letter of September 14, 1939, Exhibit H, said defendant indicated that a further communication was being prepared.

XIV.

That plaintiffs, pursuant to and in reliance upon the contract Exhibit B hereto annexed, disclosed to Shell Oil Company, predecessor of defendant Shell Oil Company Incorporated, upon the express condition that the same be retained in strict confidence, all of the developments, discoveries or inventions of plaintiffs relating to core oils and kindred products, as well as all applications for United States Letters Patent pending therefor or pertaining thereto; and pursuant to said contract Exhibit B plaintiffs authorized and permitted patent counsel for defendants and each of them to continue prosecution of said applications for Letters Patent in the United States Patent Office. In addition, and prior to the execution of the contract Exhibit B hereto annexed, and likewise upon a re-

quirement that the same be maintained in strict secrecy and confidence, and upon a promise by said Shell Oil Company to maintain all disclosures in strict secrecy and confidence and to utilize the same only under and subject to license of plaintiffs, plaintiffs disclosed to Shell Oil Company and to defendant Shell Development Company all developments theretofore made in the art of core oils and related products by plaintiffs.

XV.

That the subject matter of said inventions, discoveries or developments of plaintiffs, as made by plaintiffs both before [7] and after the execution of the contract Exhibit B hereto annexed, have at all times theretofore been preserved and maintained in strict secrecy, and that but for the actions and threatened actions of defendants and each of them, all as hereinafter more particularly set forth, all information pertaining to the discoveries, inventions or developments of plaintiffs pertaining to core oil and related products the exclusive property of plaintiffs, would now be known only to plaintiffs and those in privity with or acting in a privileged capacity with plaintiffs.

XVI.

That said Shell Oil Company, a California corporation, upon becoming merged into defendant Shell Oil Company Incorporated, disclosed to said defendant all data and information of whatsoever nature pertaining to plaintiffs' said developments,

discoveries or inventions. Further, that upon receipt thereof, both before and after the date of execution of said contract Exhibit B hereto annexed, said Shell Oil Company likewise disclosed to defendant Shell Development Company all information of whatsoever nature obtained by said Shell Oil Company from plaintiffs, relating to plaintiffs' said discoveries, inventions or developments.

That therefore and thereby, the defendants and each of them are now fully advised concerning, and are entirely familiar with, plaintiffs' said inventions, discoveries or developments, and with the character and contents of all applications for Letters Patent therefor pending in the United States Patent Office.

XVII.

That defendants, acting jointly and severally, threatened to disclose, and upon information and belief are alleged to have disclosed, to the public in general, portions or all of said confidential disclosures of plaintiffs to said Shell Oil Company and to defendants; and that in the letter Exhibit E hereto annexed, defendants, acting jointly and severally, state that they [8] intend to market for profit and cause to be marketed for profit a core oil which, upon information and belief, plaintiffs allege comprises or includes the discoveries, inventions or developments, or parts thereof, disclosed by plaintiffs to defendants in confidence; all of which plaintiffs allege to be a breach of the confidential rela-

tionship existing between plaintiffs and defendants, unless defendants account therefor to plaintiffs pursuant to the contract Exhibit B hereto annexed.

XVIII.

Plaintiffs aver that defendant Shell Oil Company Incorporated has failed to perform the provisions, and all thereof, of paragraphs 2 and 3 of the contract Exhibit B hereto annexed, by its failure to manufacture, sell and distribute the products the subject of said contract; and that defendant Shell Oil Company Incorporated has thereby breached said contract and particularly said paragraphs 2 and 3 thereof.

XIX.

Plaintiffs aver that defendant Shell Oil Company Incorporated, by failing, neglecting and refusing to perform, after July 26, 1939, the terms and conditions of said contract Exhibit B, despite the provisions of paragraph 15 thereof, which provides that "Shell Oil may terminate this license agreement in the United States at any time after five years from the date" thereof, to wit, at any time after five years from April 8, 1938, has committed, and indicates that it intends to continue to commit a breach of each and every paragraph of said contract Exhibit B calling for performance thereof.

XX.

Plaintiffs further aver that defendant Shell Oil Company Incorporated, by stating, in Exhibit E hereto, that it will at all times refuse to account to

plaintiffs under said contract Exhibit B for products for foundry use allegedly developed [9] by it during the term of said contract, has breached said contract, including paragraph 7 thereof.

XXI.

That defendant Shell Oil Company Incorporated, as set forth in a statement of its commitments and intentions in the letters Exhibits C and F hereto annexed, has refused to account to plaintiffs in any manner whatsoever for royalties accruing under said contract; wherefore, plaintiffs aver that said defendant has breached said agreement Exhibit B, and particularly paragraphs 8 and 10 thereof.

XXII.

Plaintiffs aver that defendant Shell Oil Company Incorporated, by reason of its refusal to render to plaintiffs full and complete information with regard to all products falling within the terms of said contract, and particularly by making the refusal set forth in the letter Exhibit F, has breached said contract Exhibit B annexed hereto, and particularly paragraph 27 thereof.

XXIII.

Plaintiffs allege further that they have fully, faithfully and in timely manner performed all obligations falling upon them, or either of them, under the terms of said agreement of April 8, 1938, Exhibit B hereto annexed; and that plaintiffs have in no manner breached said agreement, nor have they

agreed to or permitted any variation, modification or alteration thereof. Wherefore, plaintiffs aver that said contract is, and at all times since the execution thereof on April 8, 1938, has been, in full force and effect.

XXIV.

Plaintiffs allege that by reason of the breaches, and each and all thereof, aforesaid, plaintiffs have been damaged and injured in an amount in excess One Hundred Thousand Dollars [10] (\$100,000), but the exact amount of said injury plaintiffs can not definitely determine without the aid and assistance of this court.

XXV.

Plaintiffs further aver that they have been and now are being damaged, and are threatened with further damage, by reason of the conduct of defendants hereinbefore recited, and that plaintiffs are without adequate remedy at law and are therefore compelled to seek equitable remedy herein, including an order of this court compelling specific performance of the contract Exhibit B hereto, henceforth, by defendants.

Wherefore, plaintiffs pray that this court grant to plaintiffs relief as follows:

1. A judgment and decree of this court finding that the contract Exhibit B hereto annexed is, and at all times since the execution thereof has been, in full force and effect.

2. A decree of this court compelling specific performance of said contract Exhibit B by defendants

Shell Oil Company, Incorporated, and Shell Development Company.

3. A decree of this court determining that plaintiffs are entitled, under said contract Exhibit B, to receive royalties during the entire term of said contract on all products for foundry use manufactured, used or sold, or caused to be manufactured, used or sold, by defendants.

4. A decree of this court awarding to plaintiffs damages, in an exact amount unknown to plaintiffs but exceeding One Hundred Thousand Dollars (\$100,000), as a result of the numerous breaches of said agreement Exhibit B, all of which are hereinabove recited.

5. A decree of this court ordering an accounting to plaintiffs for royalties due to plaintiffs under said contract Exhibit B hereto annexed.

6. An order of this court awarding to plaintiffs [11] costs and such other, further or different relief as in equity and good conscience this court may deem meet and proper in the premises.

Dated: October 25, 1939.

LYDELL PECK and
ALLAN B. RUDDLE,
Plaintiffs,

By TOWNSEND & HACKLEY
CHARLES E. TOWNSEND
ROY C. HACKLEY, JR.
Their Attorneys. [12]

State of California,
City and County of San Francisco—ss.

Lydell Peck and Allan B. Ruddle, being duly sworn, depose and say that they are the plaintiffs in the above entitled action; that they have read the foregoing Complaint and know the contents thereof; that the same is true of their own knowledge except as to the matters which are therein stated on information and belief, and, as to those matters, that they believe them to be true.

ALLAN B. RUDDLE

LYDELL PECK

Subscribed and sworn to before me this 18th day of October, 1939.

[Seal]

W. W. HEALEY,

Notary Public in and for the City and County of
San Francisco, State of California.

My commission expires Aug. 29/41. [13]

EXHIBIT B

LICENSE AGREEMENT

This agreement made as of the 8th day of April, 1938, by and between Lydell Peck of San Francisco, California, hereinafter referred to as "Peck," and Allan B. Ruddle of San Francisco, California, hereinafter referred to as "Ruddle," and Shell Oil Company, a California corporation of 100 Bush Street, San Francisco, California, hereinafter referred to as "Shell Oil,"

Exhibit B—(Continued)

Witnesseth that:

Whereas, Peck and Ruddle warrant they are the owners of all rights to a new and useful core binding composition hereinafter referred to as "Core-Min-Oil," consisting of two components, a secret solution and asphalt emulsion, and to new compositions for other foundry uses such as core covering,

Whereas, Peck and Ruddle warrant that said Core-Min-Oil is fully described in U. S. Patent Application Serial No. 165,765, filed Sept. 25, 1937, entitled "Moulder Product"; U. S. Patent Application Serial No. 179,150, filed Dec. 10, 1937, entitled "Moulded Product"; and U. S. Patent Application Serial No. 184,237, filed Jan. 10, 1938, entitled "Composition of Matter", all filed in the name of Ruddle,

Whereas, Peck and Ruddle warrant that they are the exclusive co-owners of said U. S. patent applications and warrant that there are no licenses or other intersts outstanding,

Whereas, Shell Oil is interested in acquiring exclusive rights under the inventions disclosed in said patent applications,

Now Therefore, the parties have agreed as follows:

1. That Peck and Ruddle hereby grant unto Shell Oil an exclusive license to make, use or sell, under the said three Ruddle U. S. patent applica-

Exhibit B—(Continued)

tions, any renewals, continuations, divisions, substitutions of said applications and any patents to be issued thereon, and under any applications covering improvements of the inventions disclosed in said applications and other inventions in so far as [50] they relate to compositions for foundry use owned or controlled by Peck or Ruddle, and any patents issued, together with the right to sublicense third parties. Peck and Ruddle shall not make, use or sell compositions for foundry use disclosed in said patent applications and patents while this license remains exclusive.

2. Shell Oil shall diligently attempt to sell Core-Min-Oil and other compositions for foundry use as covered by said patent applications or later patents.

3. Shell Oil shall diligently attempt to interest its affiliated, subsidiary and parent companies in the United States to sell Core-Min-Oil and other compositions for foundry use as covered by said patent applications or later patents.

4. The policy and method of marketing Core-Min-Oil of its components and other compositions for foundry use and the price thereof, shall be left entirely to the discretion of Shell Oil.

5. Peck and Ruddle will not engage in the business of making or selling compositions for foundry use during the life of this agreement within the City and County of San Francisco. Peck and Ruddle represent it is their intention not to engage in the business of making or selling composi-

Exhibit B—(Continued)

tions for foundry use anywhere in the United States during the life of this agreement.

6. Peck and Ruddell hereby grant unto Shell Oil any and all good will of their business of making and selling compositions for foundry use together with all their right, title and interest in and to the term "Core-Min-Oil".

7. Shell Oil agrees that it and its affiliated, subsidiary and parent companies in the United States will pay as royalty to Peck and Ruddell on all their sales of Core-Min-Oil and other compositions for foundry use, sold for use in the United States, percentage of sales prices to consumer, F.O.B. manufacturing plant, (excluding sales tax and containers) according to the following sliding scale: [51]

On the first 1,000,000 gals. sold per year	—15%
On the next 1,000,000 to 3,000,000 gals. sold per year	—14%
On the next 3,000,000 to 6,000,000 gals. sold per year	—13%
On the next 6,000,000 to 8,000,000 gals. sold per year	—12%
On the next 8,000,000 to 10,000,000 gals. sold per year	—11%
On all over 10,000,000 gals. sold per year	—10%

8. If Shell Oil together with its affiliated, subsidiary and parent companies does not sell for use

Exhibit B—(Continued)

in the United States at least 250,000 gallons of Core-Min-Oil, during the first two years from date hereof together, or 500,000 during the third year, or 750,000 during the fourth year, or 1,000,000 during the fifth and all subsequent years, then Peck and Ruddie may declare this license agreement non-exclusive for the United States and Proceed to license third parties unless Shell Oil pays to Peck and Ruddie the royalties on such minimum quantities.

Shell Oil is entitled to apply the total sales to foundries in the United States under this agreement including sales both of the solution and emulsion parts of Core-Min-Oil, against these minimum quantities no matter whether the foundry uses such purchases for other purposes than as a core binder and Shell Oil is not obligated to check such uses. However, those quantities of solution which are separately sold for the specific purpose of core covering, shall not be included in the minimum.

In computing the additional royalty due to Peck and Ruddie under this article to prevent the license from becoming non-exclusive, the total gallonage actually sold under this agreement which may be applied against the minimum under the preceding paragraph, shall be deducted from the minimum gallonage established for the period under consideration and the difference shall represent the gallonage upon which Shell Oil may pay such additional royalties at the rate of 15% of the price per gallon. The price per gallon for this unsold quan-

Exhibit B—(Continued)

tity shall be established as the average price for which sales have been made, viz., by adding the sales prices [52] to consumer F.O.B. manufacturing plant (less sales tax and containers) on the sales applicable against the minimum for the period under consideration (excluding therefore the sales prices of solution sold for core covering, according to the preceding paragraph) and dividing this total by the number of gallons of those sales.

9. To take advantage of the sliding scale of Article 7, or the minimum yearly sales provisions of Article 8, the sales of Shell Oil, its sublicensees, affiliated, subsidiary and parent companies in the United States may be consolidated.

10. Shell Oil and its affiliated, subsidiary and parent companies in the United States will keep accurate books of account of their operations under the terms of this agreement and will render to Peck and Ruddell on or before the last days of February, May, August and November, notarized statements for the prior three months periods ending December 31, March 31, June 30 and September 30, respectively, showing the amounts of Core-Min-Oil or the components for making Core-Min-Oil and other compositions for foundry use sold, the price realized therefor, and the royalty payable.

11. Shell Oil agrees that at the time of rendering said statements called for in Article 10, it will pay to Peck and Ruddell the royalties prescribed.

12. Shell Oil will permit a certified Public Accountant mutually acceptable to Shell Oil and to

Exhibit B—(Continued)

Peck and Ruddie to inspect during reasonable business hours, its records and accounts pertaining to Core-Min-Oil and other compositions for foundry use within this agreement.

13. Shell Oil will endeavor to purchase for Five Thousand Dollars (\$5,000.00) or less, for the joint account of itself and Peck and Ruddie, the Thomas U. S. Patent 1,561,956, issued November 17, 1925, entitled "Manufacture of Cores". If Shell Oil does so purchase said patent it will deduct one-half of the purchase price from one-half of the royalties payable under this agreement to [53] Peck and Ruddie. Upon completion of said reimbursement, Shell Oil will transfer to Peck and Ruddie an undivided one-half interest in said Thomas patent.

14. The term of this agreement shall extend until the expiration date of the last issued patent owned or controlled by Peck or Ruddie covering Core-Min-Oil.

15. Shell Oil may terminate this license agreement in the United States at any time after five years from date hereof by giving thirty days notice in writing to Peck and Ruddie.

16. Shell Oil or an affiliated, subsidiary or parent company will file in its own name and at its own expense, patent applications in any country outside the United States in which it desires to make or sell Core-Min-Oil. The title to any foreign patent obtained shall vest in Shell Oil or the affiliated, sub-

Exhibit B—(Continued)

subsidiary or parent company of Shell Oil, which shall maintain such patent at its own expense. Shell Oil will inform Peck and Ruddell of the patent numbers, term and further details of any foreign patents obtained under this Article.

17. Shell Oil may terminate this license agreement in any country outside the United States after five years from date hereof by giving written notice to Peck and Ruddell. Upon Shell Oil delivering to Peck and Ruddell written notice that it or its affiliated, subsidiary or parent company elects to terminate the license in a particular foreign country, Shell Oil will arrange within thirty days for the transfer of the said foreign patent to Peck and Ruddell.

18. If Shell Oil or its affiliated, subsidiary and parent company is unable to obtain a patent on Core-Min-Oil in a particular foreign country within three years from date of filing patent application in said country, then no further royalties shall be paid to Peck and Ruddell on sales in said country.

19. The royalty rate for Core-Min-Oil sold for use in [54] foreign countries shall be one-half of the rate specified in Article 7 for like quantities. In calculating the royalties due, quantities sold for use in all foreign countries may be consolidated with each other but not with the sales for use in the United States and computed under the same sliding royalty scale. In case the sales price on which royalties are to be paid is payable in a foreign country

Exhibit B—(Continued)

or in a foreign currency, said royalty shall be subject to the same restrictions and limitations as may attach to the payment of the sales price if any when received.

20. Peck and Ruddle will instruct their patent attorney to give Shell Oil at its request all information concerning its pending patent applications (including copies of said applications and all office actions and amendments) and any further applications on improvements of Core-Min-Oil, and other compositions for foundry use. Peck and Ruddle will instruct their patent attorney to give Shell Oil's representatives at their request, a power of attorney to inspect and make copies of the Patent Office files of said pending applications.

21. Upon request Shell Oil will take over the further prosecution of said pending United States applications and any further improvements thereof until further notice given by Shell Oil.

22. Peck and Ruddle will allow Shell Oil up to six months from date of receiving copies of the present filed Ruddle applications to investigate the patent situation in regard to Core-Min-Oil. In the event Shell Oil considers the patent situation unsatisfactory at or before the end of said six months period, then Shell Oil may terminate this agreement forthwith.

23. Peck and Ruddle and Shell Oil, its affiliated, subsidiary and parent companies, agree that they will use their best efforts to prevent informa-

Exhibit B—(Continued)

tion concerning the formula of Core-Min-Oil and its method of manufacture from being obtained by unlicensed third parties. [55]

24. The obligations of Peck and Ruddle herein to Shell Oil or its assignee shall be joint and several and shall be binding upon their executors, administrators, heirs, and legal representatives.

25. Promptly upon the execution of this agreement Peck and Ruddle will inform Shell Oil in writing as to the name and address of the party to whom statements, payments, notices, etc., under this agreement shall be sent, and the sending of such statements, payments, notices, etc., by registered mail to said named party at the given address shall be considered as delivery to Peck and Ruddle until further notice in writing.

26. If Peck and Ruddle at any time fail to appoint a party to whom all statements, payments and notices are to be sent, then Shell Oil will send such statements and notices to each of Peck and Ruddle and will pay one-half of any royalty due upon this agreement to each of Peck and Ruddle, and such payment shall be considered as payment within the terms of this agreement.

27. Peck and Ruddle and Shell Oil will keep each other informed of any improvements of said products and their method of manufacture.

28. Shell Oil will grant unto Peck and Ruddle a non-exclusive, free license until notice of termination of this agreement under any improvements it

Exhibit B—(Continued)

or its affiliated, subsidiary and parent companies may make in Core-Min-Oil together with the right to sublicense. Any sublicense granted under this Article by Peck and Ruddle before notice of termination of this agreement shall remain in force.

29. In the event Peck and Ruddle decide to sell the patent rights on Core-Min-Oil or other compositions for foundry use, they will first offer the same to Shell Oil at the bona fide price offered by a wholly independent third party.

30. In the event of any assignment of this contract, then time shall be of the essence of the contract and any violation of [56] the contract or default in performance by the assignee shall give Peck and Ruddle the right to terminate this agreement without requiring any restoration by Peck and Ruddle of anything received by them theretofore; and waiver of any default without bringing suit by Peck and Ruddle shall not be considered a continuing waiver of further violations of the agreement.

In case Peck and Ruddle desire to terminate the agreement under this Article they, Peck and Ruddle, shall give written notice of termination to Shell Oil's assignee (with copy to Shell Oil) thirty (30) days prior to the date such termination shall take effect, setting forth the violation of the contract or default in performance on which the termination is based.

In the event Shell Oil's assignee remedies said

Exhibit B—(Continued)

violation or default in a manner satisfactory to Peck and Ruddle within said thirty (30) days, then the notice of termination shall be of no effect.

31. Wherever used in this agreement, the term "Core-Min-Oil" shall mean the core binding composition containing asphalt emulsion coming within the claims of any pending application or issued patent owned or controlled exclusively by Peck and Ruddle.

32. The term "affiliated, subsidiary and parent companies" shall mean the Shell Union Oil Corporation, a Delaware corporation, its subsidiary and parent companies and the subsidiaries of said parent companies throughout the world and the companies managed *to* controlled by one or more of them.

33. The term "parent company" shall mean a corporation which owns or controls directly or indirectly not less than 50% of the voting stock of another corporation, said latter corporation being a "subsidiary company".

34. The term "United States" as used herein shall include not only continental United States but also Alaska, The Hawaiian Islands and all territory which, during the term of this agreement, is subject to the jurisdiction of the United States and either [57] included in the patent grant or to which the rights of United States patents may be extended by mere registration.

Exhibit B—(Continued)

In Witness Whereof, the parties have caused these presents to be executed in counterpart originals as of the day and year first above written.

(s) LYDELL PECK

(s) ALLAN B. RUDDLE

SHELL OIL COMPANY

By (s) J. A. C. GUEPIN

Vice President

By (s) A. R. BRADLEY

Secretary

Witness:

(s) J. F. McSWAIN

James F. Peck of San Francisco, California, hereby declares that he has no interest in the above agreement and the subject matter thereof and consents and approves of its execution.

Signed at San Francisco, California, this 8th day of April, 1938.

(s) JAMES F. PECK

Witness:

(s) B. GRATAMA [58]

EXHIBIT C

Letterhead of

Bernard J. Gratama

Attorney-at-Law

San Francisco

Shell Building

November 2, 1938

Mr. R. C. Hackley, Jr.

Townsend & Hackley

Crocker Building

San Francisco, California

PECK-RUDDLE AGREEMENT

Dear Mr. Hackley:

I thank you for your letter of November 1, 1938, setting forth the principal points desired by Messrs. Peck and Ruddle in a proposal for a new agreement.

After due consideration I wish to advise you that the Shell Oil Company has decided to continue under the existing agreement of April 8, 1938, and drop all negotiations for a new agreement.

This will confirm our telephone conversation of this morning.

Yours very truly,

(s) B. GRATAMA

HB:EDB

cc: Mr. J. E. McSwain

Shell Oil Company [59]

EXHIBIT D

Letterhead of

Shell Oil Company

Incorporated

Shell Building

San Francisco

July 26, 1939

Register—Return Receipt

Mr. Allan B. Ruddie

Mr. J. Lydell Peck

Crocker Building

San Francisco, California

CORE-MIN-OIL

Gentlemen:

We refer to agreement with you dated April 8, 1938, concerning United States Patent Applications, Serial Nos. 165,756, 179,150 and 184,237, and particularly to your warranty therein that you are the owners of a new and useful core binding composition consisting of two components, a secret solution and asphalt emulsion. You have since disclosed the secret solution to us and as a result thereof, our staff has made diligent and continuous efforts to manufacture a core binding composition such as disclosed in said patent applications which would be acceptable for commercial foundry use. For this purpose, we have expended in excess of \$10,000.00. Our efforts, however, have been entirely unsuccessful and have demonstrated that a commercial prod-

uct conforming with the disclosures of said patent applications cannot be developed and marketed.

The agreement of April 8, 1938, is therefore cancellable at our election because of the entire failure of consideration and we desire to hereby notify you of our election to cancel and terminate forthwith the agreement of April 8, 1938, and do hereby notify you that the same is cancelled and terminated.

Under separate cover, we are forwarding you a report of our research to develop a core composition as proposed by you. In regard to your patent applications now being handled under our direction, we shall appreciate your informing us of the name of the attorney whom you desire to further handle these cases and to whom records of proceedings to date may be forwarded.

It is, of course, understood that we will keep the information contained in your patent applications confidential.

Yours very truly,

SHELL OIL COMPANY, Incorporated

By (s) L. G. McLAREN

Vice President [60]

EXHIBIT E

July 28, 1930

Shell Oil Company
Shell Building
San Francisco, California

Attention Mr. L. G. McLaren,
Vice President.

Gentlemen:

Re—Contract of April 8, 1938;
Your letter of July 26, 1939.

Your letter of July 26, 1930, has been received, and upon receipt of the report stated to be forthcoming in the third paragraph thereof, the same will be referred to our attorneys for analysis and an opinion.

So that there may be no misunderstanding whatsoever about our position, we may state now that we consider your letter of July 26, 1939, to be a self-serving declaration, of no force or effect, and that we therefore stand squarely upon the agreement between your concern and ourselves dated April 8, 1938, and consider the same to be in full force and effect. We therefore require you to maintain said contract fully and faithfully in all respects.

We note that you wish to relieve your legal department of the burden of prosecuting applications for patent pending under the above named agreement.

Therefore, pursuant to the terms thereof, we

notify you that you may return the complete file on said pending applications to our patent counsel, Messrs. Townsend & Hackley, 909 Crocker Building, San Francisco, California, who will continue prosecution of the applications until such time as you may wish to re-assume direct control thereof. In the interim, our counsel will keep you fully informed as to the prosecution of said applications, exactly as provided by said contract.

Very truly yours,

LYDELL PECK,

A. B. RUDDLE.

JLP:MM. [61]

EXHIBIT F

Copy

Letterhead of Shell Oil Co.

Shell Building

San Francisco

August 18, 1939

Mr. Allen B. Ruddie

Mr. J. Lydell Peck

Crocker Building

San Francisco, California

Gentlemen:

CORE-MIN-OIL

With reference to our letter of July 26, 1939, as promised in the penultimate paragraph thereof we are enclosing herewith the reports in question. These reports are as follows:

T. A. C. Report No.	79,	dated	February 24, 1938
T. A. C.	" "	90	" March 22, 1938
Special	"	R-168	" June 14, 1938
T. A. C.	"	No. 226	" June 30, 1938
T. A. C.	"	" 227	" June 30, 1938
T. A. C.	"	" 228	" July 1, 1938
Special	"	R-175	" July 26, 1938
T. A. C.	"	No. 290	" August 29, 1938
T. A. C.	"	" 367	" October 27, 1938
T. A. C.	"	" 462	" November 30, 1939
T. A. C.	"	" 472	" December 15, 1938
T. A. C.	"	" 561	" March 23, 1939

Report entitled "Preparation and Testing of Mixed Core Oils Containing Bituminous Emulsions and Sodium Silicate" dated August 7, 1939 (2 copies).

Quite apart from and in no wise resulting from the investigation made in pursuance of our arrangement with you, we found some core oils not containing the so-called "Ruddle" solution or sodium silicate which at present seem more promising from a technical standpoint. We wish you to know we intend to do further work with these oils and that we do not consider ourselves bound to in anywise report to you thereon or to in anywise account to you in connection therewith.

Very truly yours,

SHELL OIL COMPANY, INCORPORATED,

(s) L. G. McLAREN.

Encls. [62]

EXHIBIT F-1

Report: TAC-#79

Date: Feb. 24th 1938

W. O.: #1262

Shell Oil Company

Martinez Refinery

Subject: Substitute for Core Oil.

Author: E. H. Spotswood.

Summary:

When pouring iron castings at foundries difficulty is encountered due to the gas given off from the molten iron. This gas, unless able to escape, will cause blow holes in the casting and subsequent rejection of the casting.

A "Special Solution" has been invented by Mr. A. Ruddle which, it is hoped, will greatly facilitate the pouring of castings. This solution is blended with emulsion and then mixed with the proper amount of sand, and the mixture is molded into the desired shape and cooked in an oven until thoroughly dry. The finished product is the "core" for the iron casting.

The function of the "Special Solution" is to bind the sand together into the desired shape. The Asphalt from the emulsion also helps in this respect, but its prime function is to burn to carbon during the pouring of the iron casting, thus making the core friable so that it may be removed from the finished casting.

Difficulty was encountered by Mr. A. Ruddle when incorporating the emulsion with the "Special So-

EXHIBIT F-1—(Continued)

lution'' and sand. The cores obtained using this mixture were not uniform in hardness. To determine the cause of this, a number of samples were prepared in the Asphalt Applications Laboratory and the effects of variation of formula, temperature, and type of heat (electric and gas) were investigated. Also samples were dried in a CO₂ atmosphere and examined.

Conclusions:

Satisfactory cores may be prepared by using the "Special Solution", and Y-104 mixed with sand, care being taken to exclude CO₂ when drying in gas ovens.

A soft crust is formed on cores dried in a gas oven, due to the reaction between the CO₂ from combustion and the "Special Solution" which contains a large percentage of Na₂Si₄O₉. This effect can be nullified (a) by using an electric oven, (b) by placing hoods with small holes for steam to escape over the cores, or (c) by proper design of the gas oven (indirect heating). [63]

Temperatures differences do not appear to effect the finished product to any important extent. Temperatures of 300-400°F. appear most desirable, but not absolutely necessary.

A formula which consisted of the following gave good results.

Special Solution	5.30%/vol.
Sand	93.10%/vol.
Premix Emulsion	
(Y-104)	1.60%/vol.

EXHIBIT F-1—(Continued)

This formula can be varied to obtain the desired strength in the core. [64]

Reference:

In reference to Head Office Sales—Asphalt memorandum of January 7th, 1938, titled, "Union Oil Company Emulsified Asphalt for Core Oil" and Head Office Sales—Departmental memorandum of January 25th, 1938, titled "Substitute for Core Oil", and further discussion between Mr. A. Ruddle, Mr. J. F. McSwain, Mr. L. Snyder, and Mr. E. H. Spotswood, we have carried out the following experimental work.

Introduction:

When pouring iron castings at foundries, considerable care must be exercised to prevent gas accumulation and bubble formation in the casting resulting in rejection of the casting. The core, which forms the inner side of the casting, is a mixture of sand and oil molded to the desired shape and dried in an oven; this core must be very porous to allow the hot gases to escape and also should break up easily after the casting has been poured.

Presentation.

A. Application Problems

A "Special Solution" has been developed by Mr. A. Ruddle. This solution when incorporated with the sand, dries and binds the sand together in a strong unit. By this method larger, stronger, and much more porous cores can be made. However, the cores do not break up readily after pouring the cast-

EXHIBIT F-1—(Continued)

ing, and in order to overcome this difficulty, Mr. Ruddle decided to incorporate premix emulsion with the solution and sand. The asphalt burns to carbon during the pouring of the casting thus making the core friable so that it may be removed from the finishing product.

During the preparation of numerous samples at the Macauley Foundry in Berkeley, California, Mr. Ruddle observed that the samples were not homogenous in their degree of hardness. The samples prepared appeared hard on the bottom and soft on the top. Mr. Ruddle thought that possibly there was a chemical reaction between the emulsion and the solution, which is strongly alkaline. A special neutral premix emulsion was prepared (see Laboratory Report #46485-C), but the results obtained with this emulsion were not satisfactory. Further examination of the samples indicated the possibility of a settling out of the solution, since it has a higher specific gravity than the emulsion. [65]

In order to determine the cause of the inconsistency of the cores, a series of samples were prepared in the laboratory.

B. Core Making Materials

Core Sand—(Source Macaulay Foundry)

1. Mechanical Analysis

Pass	10 mesh	retained	20 mesh	.02%
"	20	"	40 "	1.70%
"	40	"	80 "	94.60%
"	80	"	200 "	3.66%
"	200	"		.02%

EXHIBIT F-1—(Continued)

2. Specific Gravity	2.65
3. Apparent Specific Gravity (loose)	1.55
4. Per cent of voids (Loose)	41.5 %

Special Solution

1. Large Percentage of $\text{Na}_2\text{Si}_4\text{O}_9$
2. Baume gravity

Y-104

Premix Emulsion

C. Experimental Data and Procedure

The trial mixes were prepared in small batches of about 800 grams each, samples being molded and dried in a small gas oven.

A series of samples were prepared using several different formulas and various curing temperatures. The following Tables I, II, and III show the data accumulated. [66]

TABLE I

Experimental Blends and Temperatures with Gas Oven

No.	% Vol. Sol.	%/vol. Emul.	%vol. Sand	Oven Temp. ° F	Drying (gram) time* (min.)	Wt. Sample	Uniformity of Hardness
1	6.65		93.35	450	78	875	Soft top and sides
2	6.50	2.08	91.42	450	—		do
3a	5.30	1.60	93.10	450	32	228	do
3b	5.30	1.60	93.10	450	90	1360	do
4a	5.30	1.60	93.10	600	37	210	do
4b	5.30	1.60	93.10	540	35	188	do
5a	5.30	1.60	93.10	400	65	211	do
5b	5.30	1.60	93.10	400	82	877	do
6a	5.30	1.60	93.10	290	105	893	Slightly soft around edges

*Time required to dry to constant weight.

EXHIBIT F-1—(Continued)

In order to compare gas and electric heat several samples were cured in the electric oven. Table II following indicates the results obtained.

TABLE II
Comparative Curing Gas and Electric Oven

No.	%vol. Sol.	% vol. Emul.	% vol. Sand	Oven Temp. °F.		Drying time (min.)	Wt. Sample (gms.)	Uniformity of hardness
				Gas	Electric			
7	5.30	1.60	93.10		370	38	188	even
8	5.30	1.60	93.10		370	90	823	even
9a	5.30	1.60	93.10		300	45	211	even
9b	5.30	1.60	93.10	580		45	207	not fully cured, soft spots
10a	5.30	1.60	93.10		300	45	211	even
10b	5.30	1.60	93.10	290		45	207	not fully cured, soft spots

To compare the degree of hardness of the different formulas several samples were prepared and observed. Table III following tabulates the results obtained.

[67]

TABLE III
Comparative Formulas

No.	%vol. Sol.	% vol. Emul.	%vol. Sand	OvenTemp. °F.		Drying (gm.) time (min.)	Wt. Sample	Hardness*	Uniformity
				Gas	Electric				
11	4.25	2.66	93.09	580		45	210	4	uneven
12	5.30	1.60	93.10	580		45	207	3	uneven
13	4.25	2.66	93.09		300	43	213	2	even
14	5.30	1.60	93.10		300	45	211	1	even

*Hardness scale, #1 denotes hardest material.

The results shown in Table II indicated that satisfactory cores could be prepared in the electric oven, but not in the gas oven. This indicated the

EXHIBIT F-1—(Continued)

possibility of the sample being effected by either the moisture or flue gases from the combustion in the gas oven.

To check the effect of CO_2 on the curing of the cores, a continuous flow of CO_2 was admitted to the electric oven and small cores were dried to constant weight and then examined. The cores completely disintegrated when touched.

To further check the chemical reaction between the CO_2 and the ingredients in the core, CO_2 was bubbled through approximately 100 cc. of the "Special Solution". A hard white insoluble material was precipitated out.

In order to cook satisfactory cores in the gas oven it appeared necessary to exclude CO_2 from the sample. A small core was molded and covered with a tin can which had a small hole punched in the top in order that the water vapor might escape. This sample was cured to constant weight at 580°F . in the gas oven and then cooled. The core appeared very satisfactory. [68]

Discussion:

The results obtained as shown in Table I indicated that the temperature of curing the samples had little if any effect. The samples cured at the lower temperatures appeared slightly superior, but all the samples were considered unsatisfactory. Comparison of samples 3a with 3b and 5a with 5b indicated no correlation between drying time and weight of dried samples.

EXHIBIT F-1—(Continued)

The samples in all cases were soft from one-half to one inch in on the top and sides. This indicated that the softening was due to conditions other than settlement.

Results from Table II show that satisfactory cores could be prepared with the electric oven, but not in the gas oven.

Samples prepared in the electric oven with an atmosphere of CO_2 crumbled to pieces upon removal from the oven. The bubbling of CO_2 through the "Special Solution" and the preparation of satisfactory cores in the gas oven when proper measures were taken to exclude CO_2 from the sample definitely establish the CO_2 as causing the softening of the shell of the sample.

Tabulations from Table III show that the degree of hardness of the finished sample may be changed by varying the formula. The exact formula to use, and especially the amount of asphalt, will depend upon how much trouble is encountered in removing the core from the finished casting. The higher the Asphalt content the more easily the core should be removed.

Conclusions:

Satisfactory cores may be prepared by using the "Special Solution" and Y-104 mixed with sand, care being taken to exclude CO_2 when drying in gas ovens.

A soft crust is formed on cores dried in a gas oven, due to the reaction between the CO_2 from

EXHIBIT F-1—(Continued)

combustion and the "Special Solution" which contains a large percentage of $\text{Na}_2\text{Si}_4\text{O}_9$. This effect can be nullified (a) by using an electric oven, (b) by placing hoods with small holes for steam to escape over the cores, or (c) by proper design of the gas oven (indirect heating).

Temperatures differences do not appear to effect the finished product to any important extent. Temperatures of 300-400°F. appear most desirable, but not absolutely necessary. [69]

A formula which consisted of the following gave good results.

Special Solution 5.30%/vol.

Sand 93.10%/vol.

Premix Emulsion

(Y-104) 1.60%/vol.

This formula can be varied to obtain the desired strength in the core.

Signed,

E. H. SPOTSWOOD.

Approved,

L. J. SNYDER.

EHS:lv [70]

EXHIBIT F-2

Report: TAC-#90

Date: March 22nd, 1938

Shell Oil Company
Martinez Refinery

Subject: Substitute for Core Oil

Author: E. H. Spotswood.

Summary:

This report is a supplement to the work carried out in T.A.C. Report #79. The purpose of this report is to furnish the Asphalt Sales Department with data on the drying rates of "Special Solution" and Y-104 mixed with sand as compared to Linseed Oil, Lin-Oil and Houghton Oil when mixed with sand. Relative information has also been obtained on the relation between drying time, and area, volume, and weight of the cores, effect of variation of the temperature on drying rates, and the behavior due to variation of formula, of the core after the casting has been poured.

Conclusions:

The curing of cores prepared from "Special Solution" Y-104, and sand, in CO₂ free ovens can be done in one third the time required for cores of the same size and shape prepared with Houghton Oil and sand. Cores prepared with either Houghton Oil or Lin-Oil cure in the same length of time while cores prepared with Linseed Oil cure more slowly.

The drying time required for cores of various

EXHIBIT F-2—(Continued)

shapes does not correlate with area, volume or weight of the core. Variations in temperature effect the drying rates of the cores, although increases in temperature above 400°F. yield small savings in time. The most desirable drying temperature is 400°F. to 500°F.

Varying the proportion of Premix Emulsion to "Special Solution" (i.e., increasing the amount of Y-104 and decreasing amount of "Special Solution") changes the strength and friability of the cores after they have been exposed to heat, equivalent to that of molten metal present during the pouring of the casting in the foundry. [71]

References:

In line with the work carried out and reported in T.A.C. Report #79 and further discussion between Mr. A. Ruddle, Mr. A. Waller and Mr. E. H. Spotswood, we have carried out the following tests:

Introduction:

This report is a supplement to the work carried out and discussed in T.A.C. Report #79, in which report it was stated that satisfactory cores could be produced using "Special Solution", Y-104, and sand, the mixture being dried in an oven free of CO₂ gas.

The purpose of this report is to furnish the Asphalt Sales Department with data on the drying rates of "Special Solution" and Y-104 mixed with

EXHIBIT F-2—(Continued)

sand as compared to Linseed Oil, Lin-Oil, and Houghton Oil mixed with sand. This and other information developed in the report will supply the Sales Department with information necessary for the introduction of the product to the Industry.

Presentation:

A. Core Making Materials

Cord Sand

1. Specific Gravity	2.65
2. Apparent Specific Gravity (loose)	1.55

Special Solution

1. Large percentage of sodium silicate	
2. Baume gravity	32°
3. Specific Gravity	1.29
4. Per cent water (by weight)	37

Premix Emulsion

Y-104

Houghton Oil

1. A. P. I. Gravity	18.6
2. Specific Gravity	.9427

Lin-Oil

1. A. P. I. Gravity	19.6
2. Specific Gravity	.9365
	[72]

Linseed Oil

1. A. P. I. Gravity	20.3
2. Specific Gravity	.9321

B. Experimental Data and Procedure

To compare the curing rates of the various oils and solution, the loss in weight of the materials when spread out in thin films in Petri dishes and cooked in the electric oven at 340°F. was recorded. The following Table I shows the data obtained.

EXHIBIT F-2—(Continued)

TABLE I

Curing Rates of Core Oils

Type of Core Binder Time cooked (min.)	Temperature Net Weight Material		340°F. 10 grams	
	Houghton Oil Loss Grams	Linseed Oil Loss Grams	Special Sol.* and Y-104 Loss Grams	Lin-Oil Loss Grams
10	2.1	0.0	6.2	1.4
20	2.3	0.1	6.2	1.6
30	2.5	0.1	6.2	2.1
50	2.9	0.2	6.2	2.2
70	3.0	0.3	6.2	3.8
135	3.2	0.3	6.2	3.8
265	3.2	0.3	6.2	3.8

*Mixture of Y-104 and "Special Solution" in ratio of 23-77 parts by volume.

The various oils reached constant weight in from one to two hours, but only after two days continuous cooking did they harden to a gum. This indicated that the binding effect obtained in the mixture of sand and oil was due to polymerization of the oil and not to evaporation. It is therefore apparent that the determination of the curing time by drying to constant weight could not be used for the oils and another method would have to be used. Also, previous experiments had shown that the determination of the drying time by curing to constant weight was unreliable in the case of the Y. 104 and "Special Solution" and more reliable method must be used. [73]

In order to compare the drying rates of cores

EXHIBIT F-2—(Continued)

prepared with different binding agents, and having different volumes and areas, a series of cubes varying in size from one to six inches on a side were molded. To facilitate the molding, a series of cubical forms were fabricated out of wood and used as molding boxes. The boxes were designed with a slight taper from top to bottom to facilitate removal of the core, and each mold box resembled a square container without top or bottom. To determine the drying time of each size cube six cubes of each size were prepared and cured in the oven for varying lengths of time. All six cubes were placed in the oven at the same time and cured for an estimated minimum length of time, when one cube would be withdrawn and the remaining cubes were withdrawn at five and ten minute intervals. The cubes when cool were sawed in two and examined for soft spots. The curing time for the first entirely hard cube in the series was taken as the correct time.

Table II following shows the data accumulated on the one inch cube, which is illustrative of the method followed.

EXHIBIT F-2—(Continued)

TABLE II

Drying Rates of One Inch Cube

Formula: "Special Solution" (% by vol.)	5.3
Y-104 (% by vol.)	1.6
Sand (% by vol.)	93.1

No.	Oven Temperature, °F.	Drying Time (min.)	Uniformity of Hardness
1	370	5	slightly wet center
2	380	10	dry
3	380	15	dry
4	380	20	dry
5	390	25	dry
6	390	30	dry

Table III following shows a summary of the data accumulated on the different cubes using "Special Solution" and Y-104 mixed with sand, and Table IV shows a summary of data obtained on the 1, 2, and 3 inch cubes using Houghton Oil and sand. [74]

TABLE III

Drying Rates of Cubical Cores using
"Special Solution"

Formula: "Special Solution" (% by vol.)	5.3
Y-104 (% by vol.)	1.6
Sand (% by vol.)	93.1

Cube Size	Drying Time	Indirect Heat Gas Oven Temp.	Weight	Volume	Area
(inches)	(min.)	(°F.)	(lbs.)	(in. ³)	(in. ²)
1	10	380	.059	1	6
2	20	380	.437	8	24
3	30	400	1.440	27	54
4	40	400	3.620	64	96
5	50	400	7.000	125	150
6	60	390	12.400	216	216

EXHIBIT F-2—(Continued)

TABLE IV

Drying Rates of Cubical Cores using
Houghton Oil

Formula: Houghton Oil 6.9% by vol.
 Sand 93.1% by vol.

Cube Size	Drying Time	Direct Heat Gas Oven Temp.	Weight	Volume	Area
(inches)	(min.)	(°F.)	(lbs.)	(in. ³)	(in. ²)
1	30	520	.059	1	6
2	65	510	.437	8	24
3	130	520	1.440	27	54

From the data contained in Table III curves were plotted of drying time against volume, area, and weight. The data correlated well giving a set of smooth even curves. A series of small cylindrical cores were prepared and the drying time was determined using a two minute increment. With the determined values for volume, area, weight, and drying time of the core, points were plotted on the graph which did not fall on any of the curves determined by the cube series. This indicates that the drying time is a function of more than one variable and that the curves would hold for cubes only and no other geometrical shapes. [75]

To establish the order of drying of the three oils with respect to each other, a sufficient number of two inch cubes were prepared so that specimens cooked for 50, 60 and 70 minutes respectively using each of the oils, could be obtained. The following Table V lists the results.

EXHIBIT F-2—(Continued)

TABLE V

Drying Rates of Cubical Cores using
Various Core Oils

Formula: Core Oil (% by vol.)	6.9
Sand (% by vol.)	93.1

Conditions:

Temperature (direct heat-gas oven)
530°F.

Drying Time (min.)	50	60	70
Core Oil	Uniformity of Hardness	Uniformity of Hardness	Uniformity of Hardness
Houghton Oil	Soft Center	Slight Soft Center	Hard—Even
Lin-Oil	Soft Center	Slightly Soft Center	Hard—Even
Linseed Oil	Very Soft Center	Soft Center	Slight Soft Center

Results as shown in the above Table V indicate that cores prepared with Houghton and Lin-Oil cure in the same length of time and those prepared with Linseed Oil take a longer time.

To determine the effect of variations of temperature upon the drying rate of the cores, two inch cubes were cooked at varying temperatures for exactly 20 minutes in the gas and electric ovens. The following Table VI tabulates the results. [76]

EXHIBIT F-2—(Continued)

TABLE VI

Effect of Variation in Temperature Upon
Drying Rate of Cores

Formula: "Special Solution" (% by vol.)	5.3
Y-104 (% by vol.)	1.6
Sand (% by vol.)	93.1

Curing time—20 minutes

Drying Tempera-

ture °F.		215	300	400
No.	Oven	Uniformity of Hardness	Uniformity of Hardness	Uniformity of Hardness
1	Gas	Soft in Center	Slightly Soft in Center	Hard—Even
2	Electric	Soft in Center	Slightly Soft in Center	Hard—Even

Results from Table VI indicates that temperature of 400°F. and up give minimum length cooking periods. Several two inch cubes were cooked at 500°F. and the length of time required compared to that required at 400°F. The saving in time fell within the time increments used in the test (5 min.).

To determine the variation in performance of cores and the degree of friability after the casting has been made, due to variation in original formula and types of core oils, a series of two inch cubes were prepared using different blends of Y-104 and "Special Solution" and sand and also Houghton oil with sand. The cubes were cured and then cooked for fifteen minutes in a muffle furnace at 1700°F. This last high temperature cooking is a fair duplication with approximately 300°F. lower tempera-

EXHIBIT F-2—(Continued)

tures, of actual pouring conditions in the foundry. The following Table VII tabulates the results obtained. [77]

TABLE VII

Effect of Formula Variation on Friability
of Cores After Severe Heating

No.	% Vol. Sol.	% Vol. Emul.	% Vol. Houghton Oil	% Vol. Sand	Heat Temp. ° F.	Time (min.)	Condition After Heating
1	5.30	1.60		93.1	1700	15	retained shape fairly hard
2	4.10	2.80		93.1	1700	15	retained shape fairly soft
3	3.50	3.40		93.1	1700	15	retained shape soft
4			6.90	93.1	1700	15	disintegrated
5		6.90		93.1	1700	15	disintegrated

The above results show that any degree of friability may be obtained by variation of the formula for the core solution.

Discussion:

The results shown in Tables III and IV tabulate the drying times for the various cube sizes, the cubes being prepared with "Special Solution" and Y-104 in one case and with Houghton Oil in the other case. The drying times are tabulated against weight, area, and volume of the cube shaped cores. Comparison of drying rates from Tables III, IV and V show the "Special Solution" and Y-104 cures three times as fast in the cube sizes up to three inches as the Houghton and Lin-Oil cores and still faster as compared to Linseed Oil cores.

EXHIBIT F-2—(Continued)

Results from Table VI show that cores prepared from “Special Solution” and Y-104 require longer drying times at temperatures of 300°F., and 215°F. especially, than do cores dried at 400°F. Temperatures of 500°F. showed slight savings in drying time as compared with 400°F.

Results from Table VII show that variation of the “Special Solution” and Y-104 proportions enables a good control of the degree of friability of the residual core remaining after the casting has been poured. [78]

The variation in formula does not effect the drying time since the water content of the Y-104 and the “Special Solution” are fairly close.

Conclusions:

The curing of cores prepared from “Special Solution”, Y-104, and sand, in CO₂ free ovens can be done in one third the time required for cores of the same size and shape prepared with Houghton Oil and sand. Cores prepared with either Houghton Oil or Lin-Oil cure in the same length of time while cores prepared with Linseed Oil cure more slowly.

The drying time required for cores of various shapes does not correlate with area, volume or weight of the core. Variations in temperature effect the drying rates of the cores, although increases in temperature above 400°F. yield small savings in time. The most desirable drying temperature is 400°F. to 500°F.

EXHIBIT F-2—(Continued)

Varying the proportion of Premix Emulsion to “Special Solution” (i.e., increasing the amount of Y-104 and decreasing amount of “Special Solution”) changes the strength and friability of the cores after they have been exposed to heat, equivalent to that of molten metal present during the pouring of the casting in the foundry.

Signed,

E. H. SPOTSWOOD.

Approved,

L. J. SNYDER.

EHS:lv [79]

EXHIBIT F-3

Special Report No.: R-168

Tech. S 121-38

Date: June 14th 1938

Shell Oil Company
Martinez Refinery

Subject: Core-Min—Emulsion Mixtures

Reference:

Memorandum of Head Office Sales—Asphalt, June 3rd, 1938, entitled “Core-Min—Emulsion”, and memorandum of Mr. G. H. van Senden, June 6th, 1938, entitled “Core-Min-Oil: Ruddle Solution”.

Summary:

In connection with the patent situation relative

to the promotion of Ruddle Solution and emulsified asphalt as binders for core making, it has appeared desirable, and perhaps necessary, to be able to market a single product comprising a mixture of the two materials, or equivalent. A series of experiments have been performed with the object of preparing such a product having satisfactory stability, both by mixing the Ruddle Solution, or sodium silicate solution, with the asphalt emulsion plus auxiliary stabilizing agents and by attempting to emulsify asphalt directly in the Ruddle Solution. No success has been obtained, as all mixtures either coagulate immediately or undergo stratification due to differences in specific gravity of the phases resulting in coagulation within 24 hours.

Discussion:

It has appeared necessary to be able to market a single product equivalent to a mixture of Ruddle Solution and emulsified asphalt, in the proportions of about 9 to 5 by volume, in order to secure patent protection for the recently developed process for making foundry cores. In experimental work to date the two materials have been mixed immediately before use, and the above proportions have been established as approximately the most useful. The experiments described below cover efforts that have been made to manufacture a single product satisfactory for this use.

The first method of attempting to produce a satisfactory mixture was to mix the Ruddle Solution into asphalt emulsions to which various stabilizers

had been added and observe the effects of mixing and settling. Three asphalt emulsions were used: regular Y-104, a special neutral premix emulsion, and a special penetration-type emulsion, the latter two of which were prepared in connection with earlier stages of the Core-Min investigation and described in Martinez Refinery letter of February 1st, 1938, entitled "substitute for Core Oil". [80]

Nine volumes of Ruddle Solution were mixed into five volumes of each asphalt emulsion, both without further stabilization and after the addition of the following stabilizing agents:

1. 0.8% rosin soap (twice the amount in regular Colas)
2. 3.0% casein as potassium caseinate (twice the amount in regular Colas Premix)
3. 0.3% Bentonite clay.
4. 1.0% Bentonite clay.
5. 0.4% rosin soap and 0.5% Bentonite clay

Note: The above percentages are based on the original asphalt emulsion.

As described above, eighteen mixtures were made, covering nearly all possible combinations of emulsifying and stabilizing agents within reasonable limits. In a few cases (the neutral premix emulsion when soap was not added, and the penetration-type emulsion plus the higher amount of clay) severe coagulation of the asphalt occurred immediately upon addition of the Ruddle solution. In all other cases the immediate coagulation was slight

to nil. When these mixtures were allowed to stand, stratification began to be visible within not more than two hours in any case. This stratification, or settlement, is due to the great difference in the specific gravities of the asphalt phase (about 1.01) and the aqueous phase (about 1.32). Furthermore, after about 24 hours every mixture had definitely settled into two layers, the upper layer consisting of asphalt largely coagulated so that it could not re-mixed with the aqueous phase.

Several of the above experiments were repeated using 32° Bé sodium silicate solution (water glass) instead of the Ruddle Solution, and exactly the same results were obtained, thus indicating that the other chemicals in the Ruddle Solution were not responsible for the failure to obtain a stable mixture.

It has been estimated that the mixing method as used in these experiments is even more apt to give a satisfactory product than direct emulsification, since the asphalt in the original emulsion is already finely dispersed and stabilized, and also is less liable to coagulation by mixing in the cold than by the action of a colloid mill, especially at elevated temperatures. As verification of this reasoning, Y-104 [81] and Ruddle Solution were mixed and the resulting apparently smooth mixture was immediately run through the Colas mill at the usual temperature of about 170°F. (which is necessary in order that the asphalt shall be sufficiently fluid that the

load on the mill is reasonable). The dispersion was completely destroyed by the mill, a molten asphalt layer and a clear aqueous layer being found in the product.

As a further experiment, Ruddell Solution and 40-50 penetration asphalt were fed to the Colas mill in the same manner as used for the regular production of Colas or Colas Premix. This experiment, also, was a complete failure, as the product consisted of asphalt and aqueous layers, with no emulsification whatever.

Signed

G. E. WARREN

Approved

L. J. SNYDER

GEW :lv [82]

EXHIBIT F-4

Report No.: TAC-226

Tech. Report: S-130-38

June 30, 1938

Shell Oil Company

Martinez Refinery

Subject: Core-Min Oil—Influence of Aluminum and Fluorine in Ruddell Solution.

Author: E. H. Spotswood.

Summary:

The following report covers the work carried out at the Vulcan Foundry in East Oakland, relative

to the determination of the influence of Aluminum and Fluorine present in Core-Min Oil solutions either singly or in combination.

A series of cores and castings were made using solutions prepared with different combinations of the salts contained in regular Ruddle Solution and water glass. During the mixing, molding, and pouring procedures, careful observations were made of each operation in order to detect any possible difference between the various solutions.

Conclusions:

Satisfactory castings have been produced using cores made with sand, Premix Emulsion Y-104 and 32° Baumé water glass. The addition of the salts, Sodium Silicofluoride, and Aluminum Sulphate, to water glass does not appear necessary or beneficial.

References:

Martinez Refinery—T.A.C. April 12, 1938—
“Foundry Experiments with Sodium Silicate as a Core Binder”.

Patent Department—April 26, 1938 “Ruddle Solution for Core Making”.

Head Office Manufacturing May 5, 1938
“Ruddle Solution for Core Making.” [83]

Introduction:

The following report covers the work done at the Vulcan Foundry in East Oakland, relative to the determination of the influence of Aluminum and Fluorine in Core-Min Oil, either singly or in combination.

This particular investigation was undertaken in conjunction with the research program outlined in the memorandum from the Patent Department, April 26, 1938—"Ruddle Solution for Core-Making", and covers Part B-No. 1 of the outlined program.

Part B-No. 1. Determine the influence of Aluminum and Fluorine singly or in combination on suitability of solution for core making.

Presentation:

In order to determine the influence, if any, of the presence of the two salts Sodium Silicofluoride and Aluminum Sulphate in the Ruddle Solution, the following work was carried out:

Procedure:

A series of cores and castings were made using solutions prepared with different combinations of the salts contained in regular Ruddle Solution and water glass. The following solutions were prepared:

Solutions:

1. 32° Baumé water glass
2. 1 part water
3 parts 40° Baumé water glass
2% by weight, based on water, aluminum sulphate
3. 1 part water
3 parts 40° Baumé water glass
2.5% by weight, based on water, Sodium Silicofluoride

The mixtures of sand, solution and emulsion were prepared at the Vulcan foundry in East Oakland and a convenient number of cores were then molded by the core makers regularly employed by Vulcan. After the various cores had been molded using the different mixtures, they were baked in the direct gas oven with the fire off. (The cores are baked with the fire off to insure against harmful influence from CO₂ gas, which tends to soften the core). During the molding of the cores, close observations were made on method of procedure and results obtained. Following are the core mixtures used and the observations made. [84]

Cores Mixtures and Casting Made

1. 4-Two inch Merco-Nordstrom valves #5264

Formula

93% by vol. dry sand

4.5% by vol. 32° Baumé water glass.

2.5 by vol. Y-104 Premix Emulsion

2. 4-Two inch Merco-Nordstrom valves #6481

Formula

93% by vol. dry sand

4.5% by vol. 32° Baumé water glass plus
aluminum sulphate (Solution #2)

2.5% by vol. Y-104 Premix Emulsion

3. 2-Six valve plugs #1736

Formula

93% by vol. dry sand

4.5% by vol. 32° Baumé water glass plus
sodium silicofluride (solution #3)

2.5% by vol. Y-104 Premix Emulsion

Discussion:

Workability of Mixture

In each case, the mixtures of sand, solution, and emulsion appeared satisfactory to the core maker from the standpoint of "feel" and general workability. There was no apparent difference between the three different mixtures.

Sticking in Cope

In each case the mixtures exercised a slight tendency to stick in the cope. (The cope is the upper half of the box which is repeatedly used by the molder to form the shape of the upper half of the core). The tendency to stick in the cope was not very pronounced and appeared to be about equal in each of the mixtures. [85]

Appearance of Baked Cores

In all three batches, the cores were harder on the "drag" side than on the "cope" side. This condition is attributed to the action of the residual CO_2 gas remaining in the oven after the fire has been extinguished. The "drag" side of the core is protected from gassing by the drier, while the cope side is exposed to the existing atmosphere.

The baked cores were considered satisfactory for pouring by the shop foreman and were, therefore, "blackened", (coated with Plumbago-Molasses mixture) placed in the molds, and poured. The pouring of several of the castings were observed and the amount of gas evolved compared with that given off from the same castings using Linseed Oil cores.

Gassing of Cores

The pouring of the four two-inch valves #5264 and the two six-inch plugs #1736 was observed, and in each case the amount of gas given off was estimated to be considerably less than that given off from the same type of casting prepared with Linseed oil.

Finished Casting

The finished castings which were poured using the cores prepared from the several solutions were carefully examined and found to be perfect in every detail. There was no apparent difference between any one of the finished castings, each being smooth finish and free from defects.

Signed

E. H. SPOTSWOOD

Approved

L. J. SNYDER

EHS:C. [86]

EXHIBIT F-5

Report: TAC—#227

Tech. Report S-132-38

Date: June 30, 1938

Shell Oil Company
Martinez Refinery

Subject: Core-Min-Oil—Substitution of Oils Other
Than Asphalt

Author: E. H. Spotswood

Summary:

The following report covers the work performed at the Asphalt Application Laboratory at Martinez Refinery relative to the possibility of substituting oils other than Asphalt Emulsion for use with Ruddle Solution in the preparation of Core-Min Oil.

Several sample cores consisting of sand, emulsified oil and Ruddle solution were prepared in the laboratory using emulsified soluble oil, emulsified bulk distillate and bulk distillate in place of emulsified asphalt. The finished cores were tested for cross bending strength and friability after heating in a muffle furnace. (Test to duplicate heat produced when pouring casting) and compared with results determined for sand, Ruddle solution, and emulsified asphalt.

Conclusions:

The sample cores prepared in the laboratory using sand, emulsified oils, (other than asphalt)

and Ruddle solution showed comparable strength and friability to cores prepared from sand, Ruddle solution and Premix Emulsion Y-104.

On the basis of appearance, and laboratory friability and strength tests, it appears that various emulsified oils *other asphalt* could be used with Ruddle solution for casting work.

Reference:

Patent Department—April 26, 1938 “Ruddle Solution for Core Making”. [87]

Introduction:

The following report covers the work performed at the Asphalt Applications Laboratory at Martinez Refinery in order to determine the possibility of using oils other than emulsified asphalt in conjunction with Ruddle solution for a suitable core binding material for casting work.

This work was done relative to Part B-No. 3 of the research program outlined at the meeting of April 22, 1938, (see above reference), which part read as follows:

Part B-No. 3 Investigate oils other than asphalt.

Presentation:

Three series of cores were prepared using various oils available at Martinez Refinery, (other than asphalt) sand and Ruddle Solution. The core mixtures were prepared, molded into bars 1" x 1" x 8" long and baked in the indirect gas oven for 10 minutes at 400°F. The baked cores were tested for friability and cross bending strength. A series of

cores were also prepared using sand, Ruddle solution and Premix Emulsion Y-104 for comparison purposes.

Following in Table I are the several core mixtures prepared, baked, and tested. The oil emulsions were prepared by simple agitation in the laboratory and were sufficiently stable for the purposes of this test.

TABLE I

Core Mixtures Prepared

Batches	1	2	3	4
Components.....	Percentage by volume			
Dry Sand	93.00	93.00	93.00	93.00
Ruddle Sol. 32° Be'.....	4.50	4.50	4.50	4.50
E-614 Sol. Oil	1.25			
Twitchell's Base		0.32		
Bulk Dist. S.S.U. 80/210°F.		0.03	1.50	
Distilled water	1.25	1.25	1.00	
Premix Emulsion Y-104.....				2.50

Cross Bending Strength

An apparatus similar to that specified by the American Foundry Association for determining cross bending strength was used. The machine consists mainly of a beam which can be loaded [88] by letting lead shot fall into a catch bucket at a specified rate. The beam applies a load to the center of the test member (core 1" x 1" x 8") which is mounted upon supports at 6 inch centers. The test, in effect, is applying a concentrated load to the center of a beam mounted on supports 6 inches apart.

Following in Table II are the strengths determined.

TABLE II

Cross Bending Strength

Baking: Indirect gas oven—10 min. @ 400°F.

Batch	Ultimate strength (lbs.) Cross bending
1.....	31.2
2.....	28.5
3.....	29.4
4.....	26.5

Friability

To obtain an indication of the degree of friability which the cores may be expected to have after actual casting in the foundry, the laboratory cores were baked for 15 minutes in the muffle furnace at 1500°F. This test is a fair approximation of the degree of heating and conditions present at the foundry when pouring castings.

In each case, after heating, the cores retained their original shapes but could be easily crushed indicating the cores were sufficiently friable for removal from castings. The degree of friability in each batch appeared the same.

Discussion:

In each case a satisfactory and homogeneous mixture was obtained by simple laboratory mixing. Even in the case of the straight bulk distillate no great difficulty was encountered in mixing, small lumps being at first formed which readily smoothed out.

The strength and friability of the cores prepared from the various oils and Ruddle solution were fully comparable to that of cores made with Premix Emulsion Y-104 and Ruddle solution.

On the basis of the test results it is probable that satisfactory castings could be made using any of the above formulas. Also, although no coal tar emulsions were available, it is understood that they can be made and would in all probability, be fully as satisfactory for this work as asphalt emulsions.

Signed E. H. SPOTSWOOD

Approved L. J. SNYDER [89]

EXHIBIT F-6

Report: TAC-#228

Tech. Report S-131-38

Date: July 1, 1938

Shell Oil Company

Martinez Refinery

Subject: Core-Min-Oil—Miscellaneous Observations

Author: E. H. Spotswood

Summary

In continuing the work on application of Core-Min Oil to foundry core making and casting, various problems have arisen and miscellaneous observations have been made. The following subjects relative to core making have been investigated

either at the Asphalt Application Laboratory or at the Vulcan Foundry in East Oakland.

(a) Water absorption of finished cores

(b) Settling of solution in unbaked cores

(c) Hardening of stock piled Core-Min Oil
—Sand mixture

(d) The minimum shell thickness necessary to protect cores partially baked in electric or indirect gas ovens from attack by CO_2 gas when baked in direct gas ovens.

Conclusions

Water absorption tests on cores made with sand and either Ruddie solution or Sodium Silicate, show similar values.

Unbaked, molded cores left standing over a period of time show no tendency for the Core-Min solution to settle in the cores.

Stock piles of a mixture of sand and Core-Min Oil left standing for a period of time form a hard crust on the surface due to evaporation of water.

Cores baked in ovens free of CO_2 gas for a period sufficiently long to insure a shell thickness of one inch, measured from the outside inward, appear to have sufficient shell protection to permit completing the baking in ovens containing CO_2 gas without detrimental results to the cores.

References

- Martinez Refinery—T.A.C. April 12, 1938—
“Foundry Experiments with Sodium Silicate
as a core Binder”

T. A. C. Report #79—"Substitute for Core Oil"

T. A. C. Report #90—"Substitute for Core oil." [90]

Martinez Refinery—T. A. C. May 26, 1938
—"Core-Min Oil"

Head Office Manufacturing May 3, 1938—
"Core-Min Oil"

Patent Dept.—April 26, 1938—"Ruddle Solution for Core Making"

Special Report #R-168—"Core-Min-Emulsion Mixtures" [91]

Introduction

In continuing the work discussed in T. A. C. Reports 79 and 90 and also in agreement with the program outlined at the meeting of April 22, 1938, further experimental work has been carried out. Incidental to the molding and casting of cores at the Vulcan Foundry and other experimental work at the laboratory, various miscellaneous observations have been made from time to time. These are hereby incorporated into a single report.

Presentation

1. Water absorption of Cores

In order to determine the degree of water absorption of cores prepared from various solutions, a series of two inch cubical cores were prepared, weighed, and placed in a desiccator partially full of water. The following Table V shows the results obtained.

TABLE V
Water Absorption of Cores

		Components—Percent by Volume			
Sample No.	.....	1	2	3	4
Ruddle Solution	.....	7.0	4.25		
Dry Sand	.....	93.0	93.0	93.0	93.0
Y-104 Premix Emulsion			2.75	2.75	
Sodium Silicate	.....			4.25	7.0
Time (days)	.....	0	6		24

Sample No.	Wt. (gr)	% Gain	Wt. (gr)	% Gain	Wt. (gr)	% Gain
1	198	—	200	1.01	200	1.01
2	207	—	208	0.48	208	0.48
3	201	—	202	0.50	202	0.50
4	201	0	202	0.50	203	0.99

Results from the above Table V show that none of the cores exhibit a tendency to absorb water to any appreciable extent. There is no apparent difference in water absorption between cores prepared with either Ruddle Solution or Sodium Silicate. The presence of Premix Emulsion tends to reduce water absorption.

2. Settling of Solution in Unbaked Cores

Cores which have been molded to shape are often placed on racks and left for periods of 24 hours or more before they are baked. In order to determine if there is any tendency for the Core-Min to [92] percolate down through cores molded and left standing for long periods, a batch of small cylindrical cores (1 inch diam. x 3 inches high) were molded and left standing for a period of 22 hours. The following formula was used.

Formula

93.0% by volume dry sand

4.5% by volume Ruddle Solution

2.5% by volume Premix Emulsion Y-104

The cores were examined after 22 hours standing in open air (Vulcan Foundry) and were pronounced satisfactory. There was no sign of settlement of the liquid, the cores appearing equally hard on both top and bottom.

3. Hardening of Stock Piled Core Material

The materials used for core making are mixed in a large roller mill, the minimum capacity of which is two wheel barrow loads or 160 quarts (Vulcan Foundry). These materials are mixed and placed in large rectangular shaped hopper boxes for general consumption and are refilled when necessary. The mixed material is kept workable by placing wet sacks over it for periods as long as three or four days.

Samples of mixtures prepared from Core-Min were stored for 22 hours under wet rags and examined. The stored pipe was found to have crusted over to a depth of one-half inch. It is reasonable to expect that longer periods will yield thicker crusts as cores can be completely dried by leaving in the open air.

4. Minimum Shell Thickness Necessary to Protect Cores from Gassing

In order to determine, if and how much crust on a core obtained by baking in the absence of CO_2

gas, will protect it from direct gas baking, a series of 3 inch and 4 inch cubical cores were prepared and baked for various intervals of time in the direct and indirect gas ovens at 400°F. The baked cores were sawed in two and examined to determine the effect on baking with the two ovens. The following Martinez Refinery Drawing 1T1-1025 will serve to illustrate the results obtained. [93]

75

(6)
Indirect Gas
11 Min.



(7)

Indirect Gas
10 Min

Direct Gas
40 Min



Cross Hatched Sections -
Gassed
Sections Hard
Evenly Cured
Sections Still Green.
(Not Thoroughly Cured).

ENG. DEPT. SHELL OIL CO. MARTINEZ

EXPERIMENTAL CORE BAKING,
CROSS SECTION OF CORES.
ASPHALT LAB.

SCALE _____
DATE 7/1/58
DRAWN JAM
CHECKED
CNR APR
APPROVED
ITL

ITL 1025-0.

Series I of 3 inch cores were baked a total of 33 minutes in each case. (Total time necessary to thoroughly cure 3 inch cores—T.A.C. #90). The indirect gas baking time was increased in increments of 2 minutes starting with 3 minutes while the direct gas baking time was reduced in the same manner starting with 30 minutes. From the illustrations it is evident that the longer the indirect gas baking time the smaller the gassed shell up to a point (Number 5 core) where either type of heating can be used without detrimental results. Cores Nos. 1 to 4 inclusive show decreased size of gassed shell with increased indirect baking time. Number 5 represented a perfect core and number 6 shows the amount and depth of indirect baking necessary to insure a good core. Series II with 4 inch cores are similar to series I.

From the Martinez Refinery Drawing No. 1TL-1025 it is apparent that the cores bake from outside inward. From the results obtained on cores up to 4 inch cubical size it appears that cores molded and baked in oven free of CO₂ gas for a sufficiently long period to insure a shell thickness of one inch measured from the outside inward and then baked for the balance of the time necessary to insure a thoroughly cured core in direct gas oven appear satisfactory.

Signed E. H. SPOTSWOOD

Approved L. J. SNYDER

EHS:AM [95]

EXHIBIT F-7

Report No.: R-175

Tech: 140-38

Date: July 26, 1938

Shell Oil Company
Martinez Refinery

Subject: Core-Min—Emulsion Mixtures

Author: G. W. Warren

Reference:

Martinez Refinery Special Report No. R-168 (Tech. S 121-38) and Head Office Manufacturing letter, "Core-Min-Oil Emulsion", of June 28, 1938.

Summary:

Further experiments intended to produce a satisfactory stable product containing emulsified asphalt and sodium silicate have been performed, both by mixing emulsion with silicate solutions and by attempting to emulsify asphalt directly in solutions of silicate and emulsifying agents. No satisfactory product has been obtained.

There appear to be two factors responsible for failure to obtain the desired product. These are: (1) difference in specific gravity of asphalt and aqueous phase containing silicate, causing settlement, and (2) loss of emulsifying properties, or even insolubility, of emulsifiers in water containing considerable concentrations of sodium silicate. Each of these difficulties and attempts to overcome them are discussed. To date neither of these has been

corrected, and both must be corrected before a satisfactory product may be obtained.

Conclusions:

No method of preparing the desired product has been found. The usual methods of preparing emulsions at Martinez, and the special means so far suggested for solution of this problem, have shown no promise of a satisfactory solution. It appears that new methods of emulsification must be sought if there is to be a solution to the problem. [96]

Introduction:

In connection with the patent situation relative to the promotion of sodium silicate and emulsified asphalt as binders for core making, it has appeared very desirable to develop a single product equivalent to a mixture of these two materials. Special Report No. R-168 (Tech. S 121-38), issued June 16, 1938, gave the results of a preliminary investigation of this problem, and this report will cover further investigation up to the present time.

Presentation:

Part I—Discussion of the Problems

The work described in the above report has lead to the conclusion that there are two parts to the problem of preparing the desired product. The first part covers the use of an emulsifying agent capable of stabilizing emulsified asphalt particles in a solution containing a considerable concentration of sodium silicate, and the second concerns adjusting the specific gravities of the asphalt and

aqueous phases so that settlement and consequent separation will not occur. Although it has been suggested that separation could be tolerated if coagulation does not occur, so that the product could be remixed before use, it has appeared to date that separation will always result in coagulation. Further, it is doubtful that a product having to be remixed would be satisfactory.

Experimental work to be described in this report has been carried out in an effort to solve the two parts of this problem separately.

Part II—Experimental Work

A—Mixing Emulsions plus Stabilizers with Silicate Solution

As described in the previous report, efforts to mix either soap or casein emulsions, plus additional soap, casein, and clay emulsifying agents, with sodium silicate in the desired proportions (5 volumes emulsion to 9 volumes of 32° Bé. sodium silicate) resulted in separation and coagulation in every case. In order to determine whether smaller amounts or concentrations of sodium silicate in the aqueous phase could be tolerated, several more series of emulsions plus stabilizers were mixed with small amounts of straight 40° Bé. water glass and 40° Bé water glass diluted 1 to 1. In addition, two new stabilizing agents were used in these trials. These were sodium naphthenate soap and Duponol W. A. Flakes (a sodium alkyl sulfate having high emulsifying properties in certain applications). In every case, regardless of combinations of emulsi-

fiers, as little as 4% by volume of water glass in either the straight or diluted form caused visible separation and partial coagulation of the asphalt within three days. These experiments indicated that none of these emulsifiers, at least when used in this manner, are effective [97] in appreciable concentrations of sodium silicate, and also that the settlement of mixtures of asphalt emulsions is very sensitive to changes in specific gravity of the phases.

B—Use of Solutizers

It has been suggested that possibly the emulsifying agents are “salted out” of solution by the sodium silicate and that “solutizers” might be used to prevent this effect. Investigation has disclosed that the emulsifiers are insoluble in the desired high concentrations of sodium silicate, but also that they appear to lose their effectiveness in more dilute solutions in which they are soluble. Several materials have been tried as solutizers (alcohols, ethers, ketones, and esters) but none has shown any promise. The alcohols and ketones precipitate the sodium silicate itself, and the other materials tried were either insoluble in the aqueous phase or ineffective in improving solubilities. In addition, most such agents are also emulsion breakers.

C—Direct Emulsification of Asphalt in Silicate Plus Stabilizer Solutions

In order to determine whether direct emulsification of asphalt in solutions of water glass plus

emulsifier would be more effective, attempts were made to emulsify asphalt in the following solutions.

1. 1% rosin soap, 30% water glass
2. 2% rosin soap, 15% water glass
3. 2% naphthenic soap, 15% water glass
4. 1% Duponol, 50% water glass
5. 2% Duponol, 25% water glass

It was previously determined that the above emulsifier concentrations represented about the maximum solubility for the given water glass concentration. Casein was even less soluble than the above agents. It should be noted that a water glass concentration of 60% would be necessary to obtain the proportions of asphalt, water, and sodium silicate considered most desirable.

Solutions No. 1 and 4 failed to emulsify the asphalt at all, No. 5 gave only a partial emulsion, No. 2 and 3 gave poor emulsions that separated and coagulated badly within a few hours. These experiments indicate that none of the emulsifiers tested are suitable for this application.

D—Mixing Chemical-Type Emulsion with Silicate Solution

Another suggestion was that a “chemical type” emulsion might be more suitable for mixing with water glass. A sample of “Bitumuls” emulsion, known to be of this type, was tried and was found to coagulate upon mixing even more rapidly than the other emulsions studied. [98]

E—Adjustment of Specific Gravities

In order to overcome the separation of the mixtures due to difference in specific gravities of the phases, it was suggested that the asphalt be filled with talc prior to emulsification. Since the desired aqueous phase has a specific gravity of about 1.23, it was necessary to add about 35% talc by weight to the asphalt in order to reach the same gravity. This was tried and the resulting mixture was fed to the Colas mill with a 3% rosin soap solution (3 times the strength used for normal Colas). It was found that much of the talc separated from the asphalt into the aqueous phase, thus losing its effectiveness as a weighing agent. The resulting mixture failed to emulsify.

Further consideration of the idea of weighting the asphalt results in the conclusion that it is probably not practical. Since the particle size of the dispersed asphalt ranges principally from 1 to 5 microns diameter, it appears that the particle size of the filler should be considerably less than 1 micron. Fillers of this size are probably not available commercially, and, in any event, other factors, as preferential wetting and water absorption, would complicate the problem still further.

The use of sodium silicate as a filler, as suggested in the letter of Head Office Manufacturing referred to above, is ruled out by the factors in the above paragraph, provided that the solid form is considered. The use of a sodium silicate solution as filler is impractical, first, because the gravity is too

low to obtain the desired effect without the use of extreme amounts, and, second, because there is no practical method of dispersing such a solution in an asphalt which is very viscous at any practical mixing temperature. In addition, osmotic effects would tend to destroy the effectiveness of any water soluble filler in whatever form used, by the same mechanism as that by which the F. K. viscosity dope works in Colas.

Conclusions:

It has been established that two factors are responsible for the failure to obtain a satisfactory product equivalent to a mixture of emulsified asphalt and sodium silicate solution. These are:

1. Lack of an emulsifying agent effective in strong sodium silicate solution.
2. Difference in specific gravity of asphalt and that of strong sodium silicate solution.

Neither of those difficulties has been overcome by any of the methods tried or suggested to date, and there appears little prospect that either will be solved unless new and better emulsifying agents are found or radically new methods of preparation are discovered.

Signed

G. E. WARREN

Approved

L. J. SNYDER [99]

EXHIBIT F-8

Report TAC #290

Tech. No. S-165-38

Date: August 29, 1938

Shell Oil Company
Martinez Refinery

Subject: Core-Min Oil.

Author: E. H. Spotswood.

Summary:

The following report covers the work carried out at the Asphalt Applications Laboratory and the Vulcan Foundry in East Oakland.

In order to establish the useful limits of the proportions of sand, sodium silicate, and premix emulsion for patent purposes, various series of cores were prepared and tested for strength and friability (strength after ignition). Curves were drawn showing the variables, and limits were established on the curves based on comparison with Linseed Oil mixtures.

Conclusions:

The useful limits for Core-Min-Sand mixtures have been established on the basis of workability, strength and friability (strength after ignition). These limits are intended for use with cores which are to replace cores made with Linseed Oil as a binder.

Martinez Refinery Drawing #1TL-1053 attached on the following page shows the various groups of curves with the limits of useful formulae.

Exhibit F-8—(Continued)

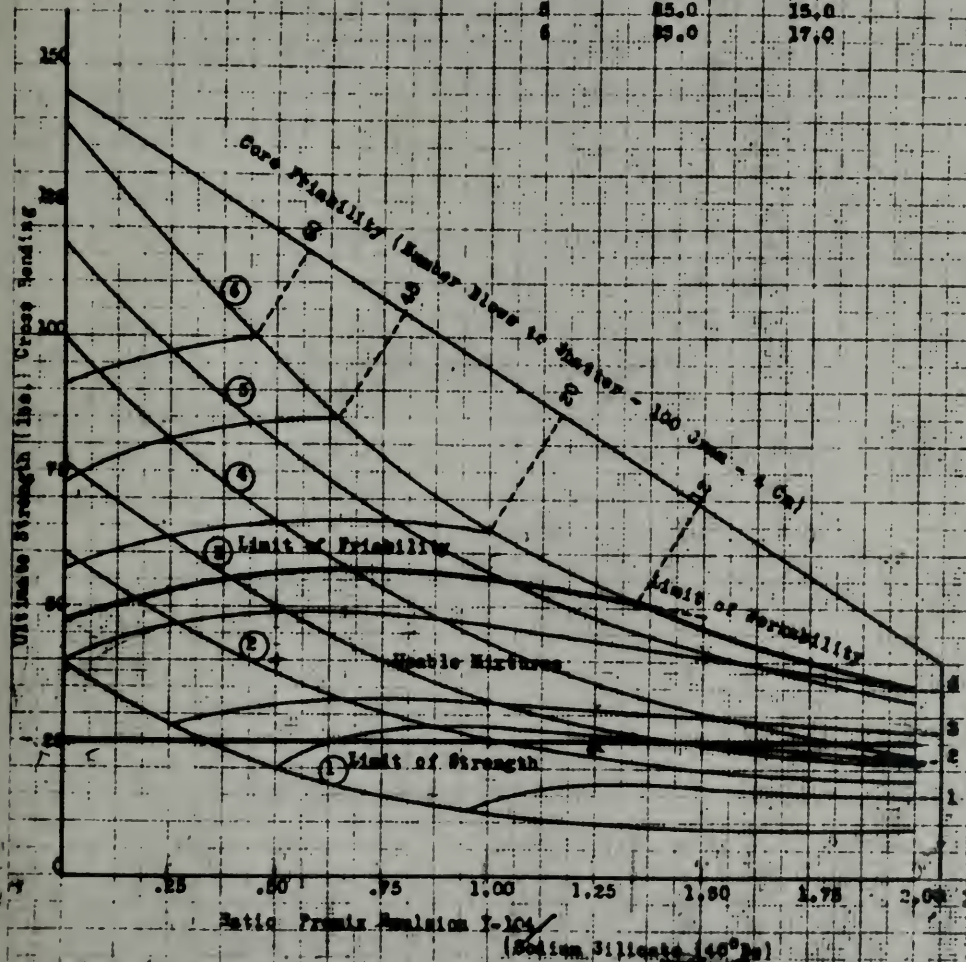
It should be noted that although Core-Min formulas containing 100% Sodium Silicate are included under the friability limit of 12 established for patent purposes, in actual use Premix Emulsion would have to be added to secure the degree of friability (about 2-3) desired at the foundry.

Reference:

Discussion of June 21, 1938 at Martinez Refinery at which Mr. Zublin, Patent Department, and Mr. McSwain, Asphalt Sales, requested that the usable limits of proportions of sand, Premix Emulsion and sodium silicate be established for Core-Min.-Sand mixtures. [100]

1700 - F.

Curve No.	% Sand By Volume	Core Min.
1	97.0	3.0
2	95.0	5.0
3	93.0	7.0
4	89.0	11.0
5	85.0	15.0
6	83.0	17.0



ENG. DEPT. SHELL OIL CO. MARTINEZ

USEFUL LIMITS CORE MIN. OIL MIXED
ASPHALT LABORATORYSCALE:
DATE: 8-10-38
DRAWN: JJV:PS
CHECKED:CHK APP: [Signature]
APPROVED:
17L-1053 - 0

Exhibit F-8—(Continued)

Introduction

In order to establish the limits of the proportions of sand, sodium silicate, and premix emulsion for patent purposes, on the basis of strength and friability, (strength after ignition) it was necessary to determine the strengths and degrees of friability of various Core-Min Sand mixtures at the laboratory and correlate the results obtained with those at the Foundry.

Presentation

In order to determine the strengths of all the workable combinations of sand, sodium silicate, and premix emulsion and to obtain sufficient data to establish a family of curves of various sand to Core-Min proportions, six series of cores 1 x 1 x 8 inch were molded, baked, and tested for cross bending strength. Within each series the ratio of premix emulsion to sodium silicate was varied from 0 to 2 in steps of 0.25. Following are the materials used.

Core Materials

Del Monte sand-fine

Sodium Silicate, 40° Baume

Premix Emulsion Y-104

Procedure

The materials were hand mixed. In each case the proper weight of sodium silicate was added to the sand and thoroughly mixed in. The premix emulsion was then added in the same manner and mixed

Exhibit F-8—(Continued)

in. The core mixtures were then molded into bars 1" x 1" x 8" long and baked in the electric oven at 340-350° F. for the correct time for maximum strength. The baked bars were allowed to cool to laboratory temperature and were then tested for cross bending strength. Three bars were broken for each determination.

Cross Bending Test

An apparatus similar to that specified by the American Foundry Association for determining cross bending strength was used. The machine consists mainly of a beam which can be loaded by letting lead shot fall into a catch bucket. The rate of application of load is 24# per minute. The beam applies a load to the center of the test member (core 1" x 1" x 8") which is mounted upon supports at 6 inch centers.

Correct Baking Time for Maximum Strength

Since each of the six series contain different proportions of sand and Core-Min solution, it was necessary to determine the correct baking time for each sand series. The formula in each series containing 100% sodium silicate in the Core-Min (0 ratio of Premix [102] emulsion to sodium silicate) was used in each case, since that proportion requires the longest baking period and the resultant strengths are higher and fall off faster, therefore making this series of ratios more critical. The following Table I shows the formulas of the several

Exhibit F-8—(Continued)

Core mixtures and the baking time required to reach maximum strength and Martinez Refinery Drawing No. 1TTL-1054 shows the cross bending strength plotted against baking time.

TABLE I
Core Mixtures for
Time-Strength Curves

Curve No.	Ratio Designation	Ratio Emul/Sil.b.v. **	%Dry Sand by vol.	%Core-Min* by vol.	Time for Maximum Strength (Min)
1		0.0	97.0	3.0	15
2	a	0.0	95.0	5.0	20
3	a	0.0	93.0	7.0	20
4	a	0.0	89.0	11.0	30
5	a	0.0	85.0	15.0	35
6	a	0.0	83.0	17.0	35
8	—	0.55	92.0	8.0	20
x	a	0.0	87.0	13.0	30
x	i	2.0	87.0	13.0	25

*Core-Min meaning any workable mixture of sodium silicate and premix emulsion Y-104.

**Note 1—Throughout this report a ratio of 0.0 will indicate 0 parts premix emulsion to 1 part sodium silicate by volume. In like manner a ratio of 0.55 will indicate 0.55 parts premix emulsion to 1.0 part sodium silicate.

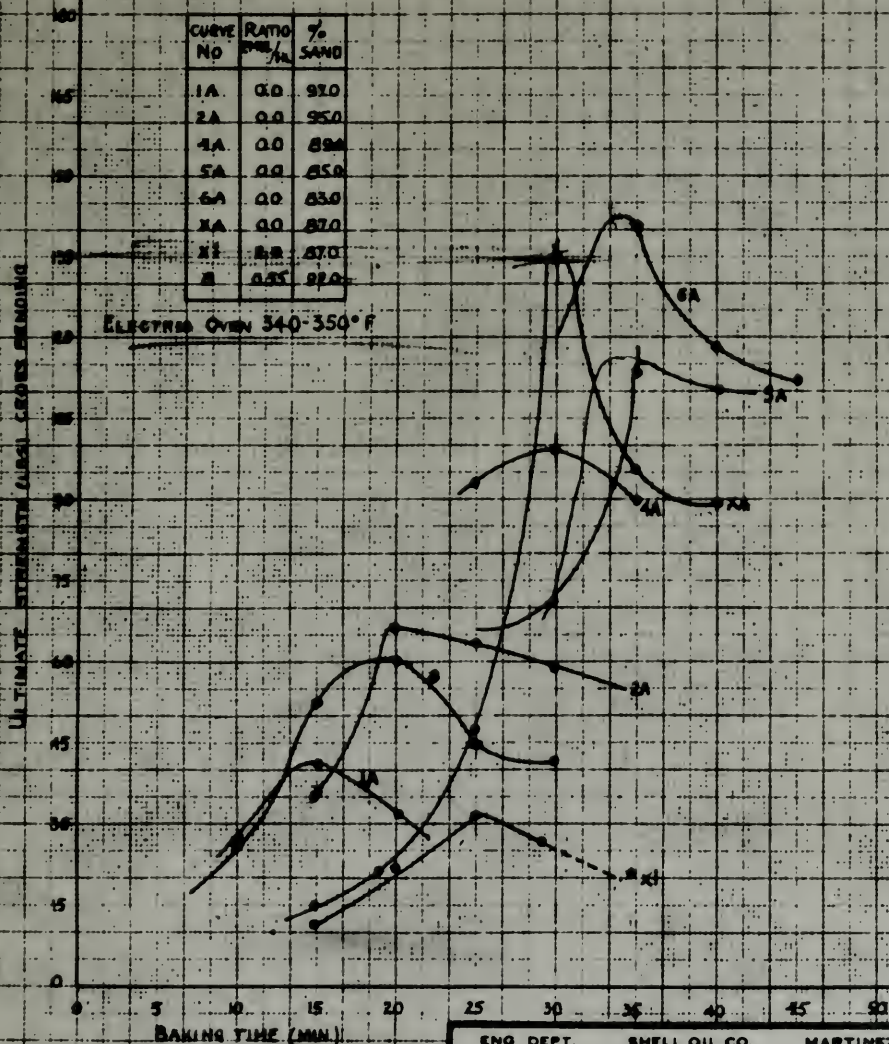
From the above table and Martinez Refinery Drawing number 1TTL-1054 it can be seen that the various series require different baking times depending upon the formulas used. The series with higher percentages of solution and lower percentages of sand (5, 6 and x) rise much more sharply in strength than the lower concentration series. In any one series, xa and xi), the difference in bak-

Exhibit F-8—(Continued)

ing time due to change of ratio of premix emulsion to sodium silicate from 0 ratio (100% sodium silicate) to a ratio of 2.0 (2 parts by volume Y-104 to 1 part sodium silicate) is not over 8 minutes. The baking times for maximum strength were, therefore, chosen on the basis of the zero ratios and are tabulated in Table I.

Series of Strength Curves

As described previously, the mixtures were prepared, molded and baked in the electric oven at 340-350° F. for the correct time for maximum strength. The following Table II shows the formulas and strength for the six series and Martinez Refinery Drawing #1TL-1051 shows the ultimate strengths in pounds, cross bending plotted against the ratios of premix emulsion (Y-104 to sodium silicate 40° Baume). [103]



ENG DEPT. SHELL OIL CO MARTINEZ

BAKING TIME FOR MAXIMUM STRENGTH
ASPHALT LABORATORY

SCALE: 1/2"

DATE: 8-10-1938

DRAWN: J. J. V

CHECKED:

CHK APPR: H. R.

APPROVED:

ITL-1054-0

Exhibit F-8—(Continued)

TABLE II

Strength Curves

Curve Number		1	2	3	4	5	6
% Core Min (By vol.)		3.0	5.0	7.0	11.0	15.0	17.0
% Dry Sand (By vol.)		97.0	95.0	93.0	89.0	85.0	83.0
Ratio Designation	Ratio Emul/ Sil. by vol.**	Ultimate Strength (Lbs.) Cross Bending					
a	0	39.5	59.1	75.7	98.4	116.1	139.1
b	0.25		47.0	66.2	77.3	100.0	
c	0.50	20.4	36.3	50.1	64.0	81.9	95.4
d	0.75		34.8	39.9	55.5	66.3	
e	1.00	10.8	27.0	32.1	47.2		63.1
f	1.25		27.1	31.5	34.9	49.5	
g	1.50	11.4	21.6	26.4	29.4		44.4
h	1.75		18.3	19.2	27.3	35.1	
i	2.00	9.3	17.7	20.7	22.8	32.1	35.2

From Martinez Refinery Drawing #1TL-1051 it can be seen that the six series form a family of curves with decreasing strength as the ratio of pre-mix emulsion to sodium silicate is increased and increasing strength as the percentage of Core-Min is increased and the percentage of sand reduced.

The limits of investigation were confined to curves 1 to 6 inclusive. Curve 1 was considered as the lowest strength curve which could possibly be used and curve 6 was considered as the highest usable curve from the standpoint of workability. Greater proportions of Core-Min solution in the mixture approached a "sloppy" condition which would be unfit for molding.

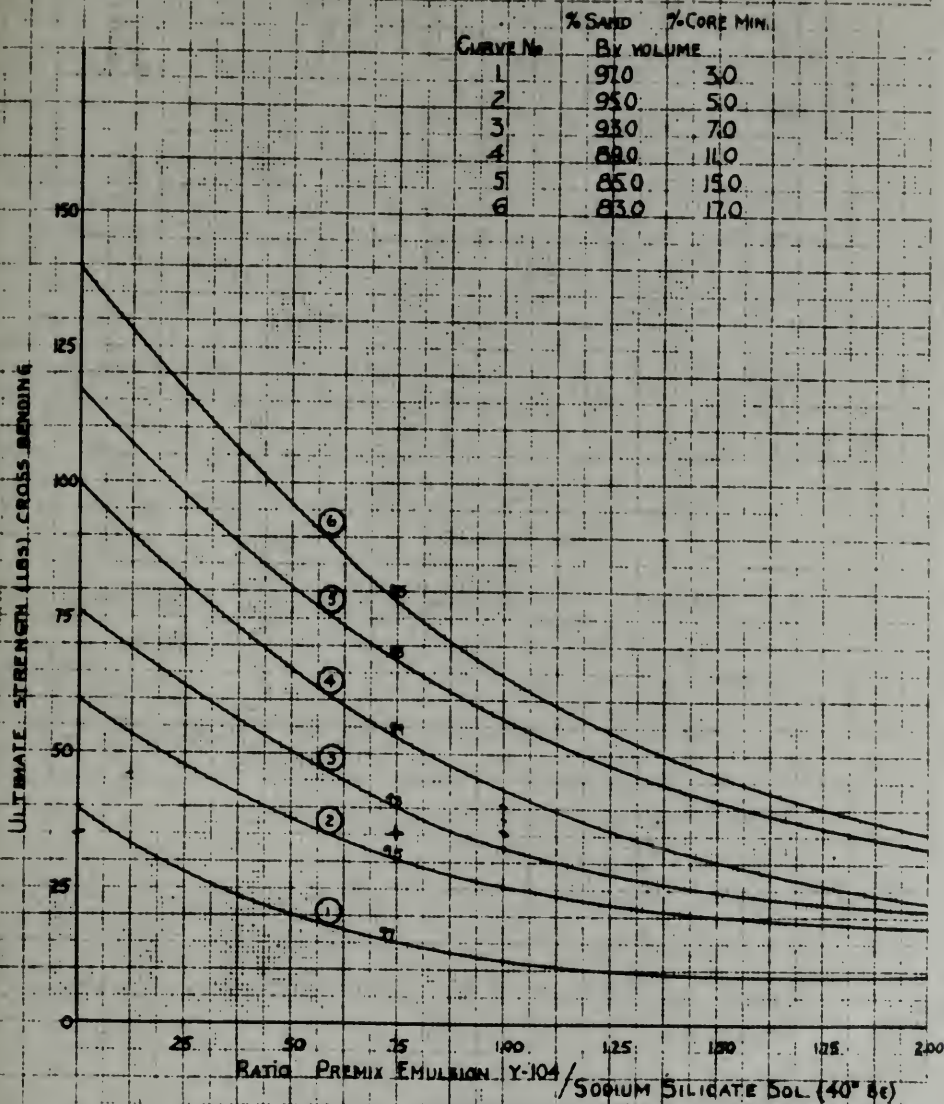
Friability Date (Strength after ignition)

Since the limits of usable mixtures are to be

Exhibit F-8—(Continued)

established on the basis of both strength and friability, samples of cores from each of the various mixtures used in the strength tests were saved and tested for friability. In order to approximate as closely as possible the conditions of pouring at the foundry, the test as described under Friability Test was initiated.

To determine maximum core temperatures when pouring metal at 2600 to 2700°F., thermocouple leads were placed in the center of a core and connected to an automatic Brown recording pyrometer. A complete temperature log was obtained over a 24 hour period from the time of pouring. A maximum temperature of 1800° F. was reached in the core center 15 minutes after pouring. This temperature dropped to 1300°F. in one and one-half hours and thereafter dropped at the rate of 150°F. per hour. [105]



ENG. DEPT. SHELL OIL CO. MARTINEZ

**STRENGTH CURVES-CORE MIN MIXES
ASPHALT LABORATORY**

SCALE:
DATE: 8-9-1936
DRAWN: J. J. V.
CHECKED:

CHK APPR: *[Signature]*
APPROVED:
ITL-1051-0

Exhibit F-8—(Continued)

Further inspection of pouring conditions showed that the core is completely enclosed in the mold, and that air is almost entirely excluded. This condition leaves the carbon (from the ignition of the asphalt during pouring) deposited or mixed in the core after pouring. The presence of the carbon effects the friability (strength after ignition) to a marked extent. The absence of free carbon which could be caused by the combination of the carbon with free oxygen present during pouring would alter the friability.

The test established takes in consideration the effect of temperature and lack of free oxygen.

Friability (Shatter) Test

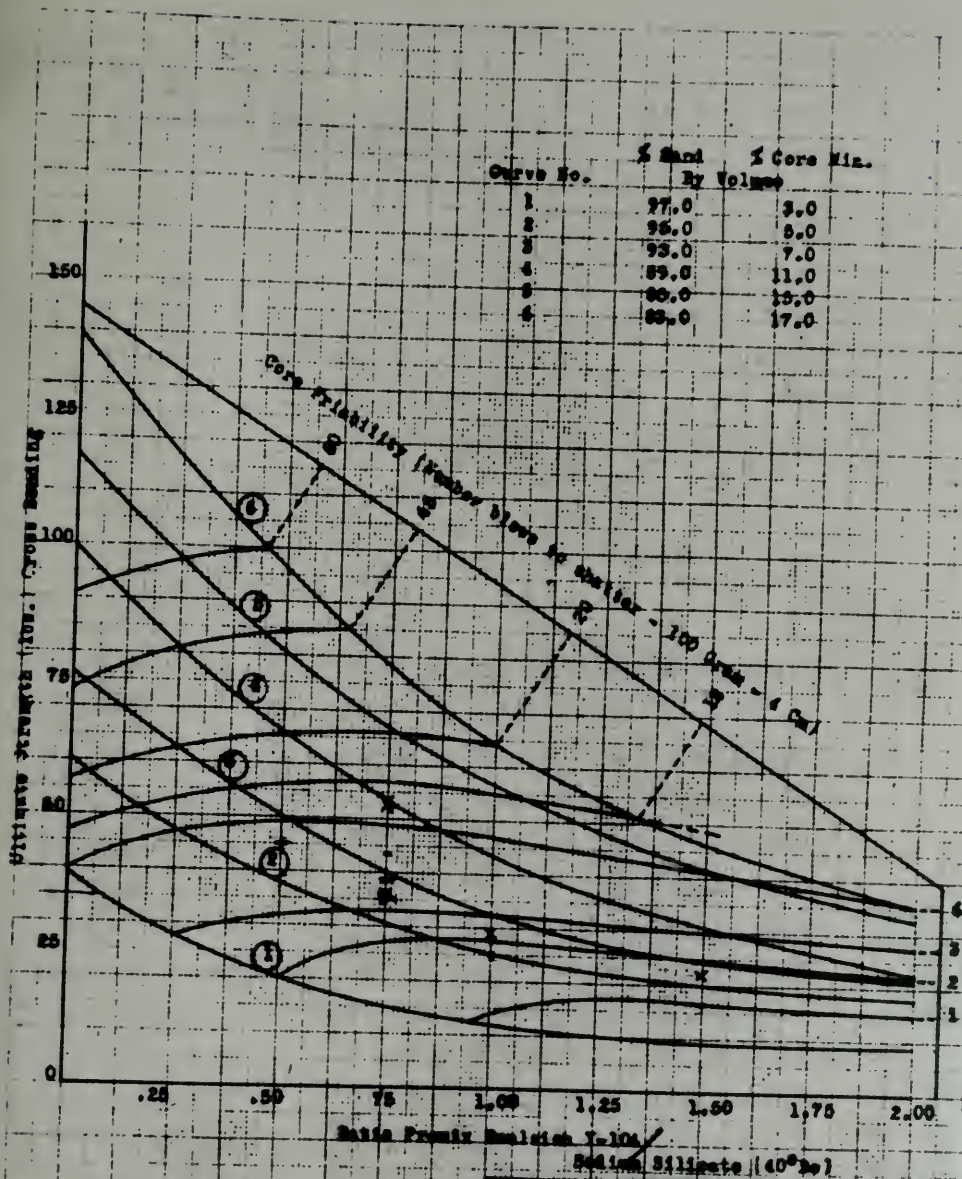
To obtain the degree of friability of each of the mixtures, two one-inch length pieces are cut off each of the bars (1 x 1 x 8 inches) saved and these are placed in 6 oz. penetration tins. The tins are then packed level full with clean sand, the specimens or cores being then completely surrounded by sand. The covers are replaced on the tins and each tin is then carefully baked in the muffle furnace at 1750°F. for thirty minutes. The tins and contents are then allowed to cool to laboratory temperature. Each one inch cubical core is then placed on the steel anvil of the shatter machine. A flat anvil, 3/16" thick by 1" square, (wt. 54 gr.) is placed on top of the specimen. The release of the shatter machine is pressed, which allows a plunger (wt. 100 gram) to fall 4 cm. and strike the top anvil.

Exhibit F-8—(Continued)

The plunger is then returned to its original height and again dropped. This procedure is repeated until the specimen is completely shattered. The number of blows required is recorded as the friability number or strength after ignition. Two determinations were made for each of the various formulas used, except in the case of doubtful values where a third determination was made.

Friability Values

Following in Table III are the friability values (number of blows required to break specimen) obtained for the various mixtures used in Table II and Martinez Refinery Drawing #1TL-1052 shows the ultimate strength in pounds cross bending and the lines of constant-friability plotted against the ratio of premix emulsion Y-104 to sodium silicate (40° Baumé). [107]



ENG. DEPT.	SHELL OIL CO.	MARTINEZ
STRENGTH AND FRIABILITY CORE MIN. MIXED ASPHALT LABORATORY		
SCALE:	DATE: 8-10-36	CHK APPR. J. J. V.
DRAWN: JJV:PB	CHECKED:	APPROVED:
		17L-1052-0

Exhibit F-8—(Continued)

TABLE III

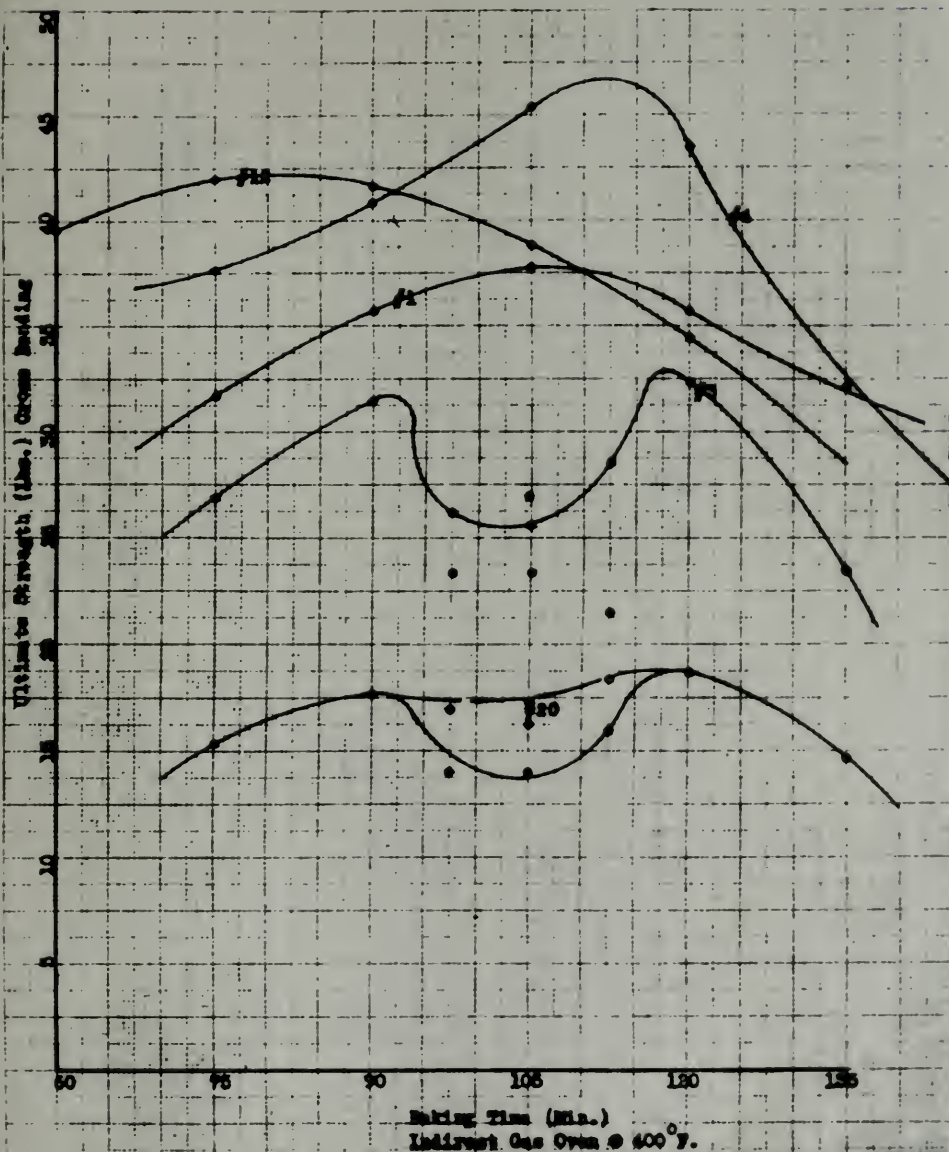
Friability Numbers

Curve Number	1	2	3	4	5	6	
% Core-Min (By Vol.)	3.0	5.0	7.0	11.0	15.0	17.0	
% Dry Sand (By Vol.)	97.0	95.0	93.0	89.0	85.0	83.0	
Ratio Designation	Ratio Emul/** Sil. by vol.	Core Friability (No. Blows)					
a	0.0	6	24	46	150+	—	—
b	0.25	—	6	15	43	60	—
c	0.50	2	4	7	20	49	58
d	0.75	—	2	4	8	16	—
e	1.00	1	2	3	5	—	21
f	1.25	—	1	2	4	11	—
g	1.50	1	2	3	3	—	10
h	1.75	—	2	3	3	9	—
i	2.00	0	1	2	3	6	6

**See Note 1, Page 3.

Correlation with Foundry

In order to establish the limits of the data plotted on Martinez Refinery drawing #1TL-1052 a series of mixtures were obtained at the Vulcan Foundry and tested in the laboratory for strength and friability. The formulas and types of castings produced with the various mixtures obtained were also noted, so that appropriate formulas using Core-Min could be recommended for the same types of castings. The following Table IV gives the formulas, maximum strengths, friabilities, and uses of the mixtures obtained. Martinez Refinery Drawing #1TL-1071 shows the cross bending strength of the Vulcan Foundry mixtures plotted against baking time. The mixture number corresponding to formula in Table IV is noted on each curve. [109]



ENG. DEPT.	SHELL OIL CO.	MARTINEZ
STRENGTH TIME CURVES - VULCAN FOUNDRY		
LINKED OIL - SAND MIXES		
ASPHALT LABORATORY		
SCALE	DATE: August 26, 1938	CHK APPR: J.A.S.
DRAWN: J.A.S.	APPROVED:	17L-1071-C
CHECKED		

Exhibit F-8—(Continued)

TABLE IV

Vulcan Sand Mixes

Sand Mixture No.	Type of Work Used for	Formula	Ultimate Strength (lbs.) (Cross Bending)	Friability (Number Blows)
1	Used on all castings made with driers (drags) except burners and any cast- ings requiring an extra smooth surface.	320 qts. sand (fine) 5 qts. Linseed Oil 11 qts. tux	37.5	1
3	Used on all large castings which are not baked in driers and which do not require high pressures.	240 qts. sand (course) 3 qts. Linseed Oil 14 qts. tux	32.3	1
4	All types of burners	320 qts. sand (course) 8 qts. Linseed Oil	47.0	1
12	Small bodies with sharp grooves and corners (Small Nordstrom bodies)	80 qts. sand (fine) 2½ qts. sandblast 2½ qts. Linseed Oil	42.5	1
20	All large castings requiring pressure	120 qts. sand (fine) 80 qts. sand (extra fine) 6 qts. silica flour 5 qts. Linseed Oil 9 qts. Tanscar	18.0	1

Exhibit F-8—(Continued)

From the Martinez Refinery drawing #1TL-1071 and Table IV it is evident that the cross bending strength and degree of friability of the mixtures used to pour the many varieties of castings made at Vulcan Foundry vary from 18.0 to 47.0 pounds and have zero friability respectively.

Limits of Useful Core-Min Formulas

1. Lowest Proportion Core-Min to Sand

From Table IV, the lowest strength of Linseed Oil mixes is seen to be 20 pounds ultimate strength in cross bending, this being the lowest safe value which should be applied to Core-Min. A value of 25 pounds strength is recommended.

2. Highest Proportion Core-Min to Sand

From the discussion on Table II, the highest proportion of Core-Min to Sand is determined by the workability which value should run not more than 17% Core-Min or equivalent liquid and not less than 83% sand in any case. [111]

3. Strength after Ignition (Friability)

Values of Linseed Oil mixtures, when tested in the manner described on the preceding pages, were in all cases one. This value indicates that the molded specimens after ignition were so friable that they would pour after having been struck one blow. It is desirable in casting work, that the core material after heating hold its shape and remain in the casting through a period of handling and then be in

Exhibit F-8—(Continued)

such a condition that it can be easily removed. It is estimated that a friability number of one to three would attain this condition and would be the desirable value to use in actual foundry work. However, for patent purposes, it is estimated that a limit of twelve friability number be chosen as a suitable value. Castings were made using formulae which gave this value and it is found that the cores could be removed, but with some difficulty.

It should be pointed out that these friability limits apply only to those sizes of cores which are prepared using Linseed Oil mixtures. In very large castings, Linseed Oil is not used and friability is not important, since the castings are usually so large that the workman can remove the spent cores with air-hammers and other similar tools.

Conclusion

Martinez Refinery Drawing #1TL-1053 shows the various groups of curves with the limits of useful formulae based on the above established limits.

Signed,

E. H. SPOTSWOOD.

Approved,

L. J. SNYDER.

EXHIBIT F-9

Private & Confidential

Report: T.A.C. #367

Tech. No. S-188-38

Date: October 27, 1938

Shell Oil Company

Martinez Refinery

Subject: Core-Min Oil—Experimental Emulsions

Author: E. H. Spotswood

Summary:

Relative to the manufacture of a stable mixture of sodium silicate and asphalt emulsion in such proportions to be suitable for core making when mixed with sand, the following experimental mixtures have been tested for their suitability for core making.

I. A series of six experimental emulsions comprised of sodium silicate and various petroleum products prepared by Shell Development Company. These emulsions are of particular interest since they can be manufactured at Martinez Refinery. Further work is being carried out on these and similar mixtures by the Shell Development Company and these mixtures will be tested at Martinez Refinery.

II. A mixture of sodium silicate and a cracked asphalt clay-type emulsion manufactured at Amsterdam and obtained from the Shell Development Company. This type of emulsion can not be manu-

EXHIBIT F-9—(Continued)

factured at Martinez Refinery with the equipment available, but is of interest being a clay-type emulsion.

III. A mixture of sodium silicate and carbon black wherein the carbon black replaces the asphalt in the mixture. The possibility of using this material is of interest as an outlet of products manufactured by the Shell Chemical Company.

Conclusions:

Part I Cores prepared with the series of six experimental emulsions CM-24 to 29 inclusive give reasonably comparable strengths and friabilities to those prepared with Colas Y-104.

All the emulsions cream to varying extents upon standing. Those prepared with Gum Tragacanth as emulsifier appear least viscous and most workable. The emulsion prepared with sodium silicate and Albino asphalt appears good from the standpoint of cleanliness.

Part II Cores prepared with Amsterdam emulsion and sodium silicate showed moderately higher strengths and lower friabilities than equivalent Colas mixes. [112]

The workability of the Amsterdam emulsion is somewhat poorer than that of Colas from the standpoint of molding and cleanliness, and the mixture of emulsion and silicate cream after several days standing.

Part III The substitution of carbon black for asphalt does not appear promising due to lower

EXHIBIT F-9—(Continued)

strength and very poor workability. [113]

Introduction:

Further to the research program being carried out at Shell Development Company to prepare a stable mixture of sodium silicate and asphalt emulsion in such proportions to be suitable for core making, a series of products were prepared by Shell Development Company and tested at Martinez Refinery for strength and friability.

Presentation:

Various points were chosen from Martinez Refinery Drawing No. 1TL-1053 (Refer T.A.C. Report #290) in order to obtain a variation of formula, strength and friability. Equivalent mixtures were then prepared using sand and the various emulsions submitted.

Following are the various mixtures prepared, the strength and friability results obtained, and observations on the workabilities.

Part I Sodium Silicate—Petroleum Product Emulsions

Following is the list of the six experimental emulsions prepared with the laboratory colloid mill at Shell Development Company, and the percentage composition by weight of each.

EXHIBIT F-9—(Continued)

TABLE I.

Experimental Core-Min Emulsions

Colloid Mill Sample No.....	CM-24	CM-25	CM-26	CM-27	CM-28	CM-29
Components	% by Weight Components					
10% Emulsone B in water (0.1% Formalin).....	23.0		23.0	21.5	29.2	
10% Gum Tragacanth in 0.1N KOH.....		23.0				23.0
Colas Emulsion (Y-104).....	23.5	23.5		24.0	29.6	
Sodium silicate (32°Be') ¹	53.5	53.5	53.5			53.5
Sodium silicate (42.5° Be') ¹				54.5	41.2	
Albino Emulsion (60% Asph) ²			23.5			
Mixed Lube Crude Feed emulsified with Casein						
61% Oil) ³						23.5

¹Na₂O : 3.36 SiO₂²Albino Asphalt Pen/77°F=128³Mixed lube crude feed Visc. S.F./122°F=68

[114]

EXHIBIT F-9—(Continued)

Equivalent Mixtures

By calculation CM-24, 25, 26, and 29 were found to have a ratio by volume of emulsion to sodium silicate (32°Bé) of 0.56 which is equivalent to 0.74 ratio, based on sodium silicate (40°Bé). In like manner CM-27 and CM-28 are equivalent to ratios of 0.57 and 0.93 respectively based on sodium silicate (40°Bé). Equivalent mixtures were prepared using sand and emulsions CM-24 to 29 inclusive based on the intersection of Line 3 (T.A.C. Report #290) and the above calculated ratios as based on 40°Bé sodium silicate. The expected strengths and friabilities, based on the use of 40° sodium silicate and Y-104 emulsion, were also obtained from the intersection of the ratios and line 3.

The line chosen (3) should give a formula containing 93% by volume of sand and 7% by volume of Core-Min Oil. However, the equivalent mixtures contained approximately 11% by volume of experimental emulsions and 89% sand due to the greater amount of dilute emulsifier and the lower gravity sodium silicate (in most cases 32°Bé) than equivalent ratios prepared with Colas Y-104 and 40°Bé sodium silicate.

The presence of "extra" water causes some differences in strength and also changes the baking time of the molded cores. Strength and friability values obtained by conversion to equivalent formulas, therefore, are not strictly comparable but give a reasonably close indication.

EXHIBIT F-9—(Continued)

Core Strengths and Friabilities

By trial baking and interpolation, the correct average baking time was estimated to be 20 minutes. Cores were prepared and baked using the several solutions. Following in Table II are the strengths and friabilities obtained using regular test methods (T.A.C. Report No. 290).

TABLE II

Sodium Silicate—Petroleum Product Emulsions

Baking Temperature 350°F (indirect gas oven)

Baking Time 20 minutes

Sample	Experimental Mixtures		Equivalent Colas Mixtures	
	Strength (Lbs.)	Friability (No Blows)	Strength (Lbs.)	Friability (No Blows)
CM-24	31.5	2	40	4
CM-25	30.0	2	40	4
CM-26	33.1	2	40	4
CM-27	28.9	4	48	6
CM-28	20.0	2	34	3
CM-29	49.2	4	40	4

From Table II it is evident that the strengths and friabilities vary considerably from comparative Colas mixtures. This is to be [115] expected since the water content differs considerably and further the points were not determined by means of maximum points on baking curves as was done previously. (The limited amount of sample available prevented this). However, the strengths and friabilities show reasonable values and indicate the material is functioning as desired. (i.e.—asphalt present is creating desired friability).

EXHIBIT F-9—(Continued)

Workability

In all cases the emulsions mixed reasonably well with the sand, giving homogeneous mixtures. Visual inspection showed the mixes to be of uniform color. The emulsions containing Gum Tragacanth as emulsifier mixed slightly easier with the sand than those containing Emulsone B. This difference in ease of mixing can probably be attributed to the lower viscosity of the emulsions prepared with Gum Tragacanth.

All of the mixtures prepared molded with equal ease, the amount of sticking in the mold box being comparable to equivalent Colas mixtures. In like manner the general cleanliness of the mixtures in handling was similar to Colas with the exception of the mixtures prepared using emulsion CM-26 (containing Albino asphalt). In this case the mixture was much cleaner to handle and gave cores of a light yellow color.

In all cases the emulsions creamed after approximately 60 hours standing, a portion of the sodium silicate settling out on the bottom as a clear layer. The layers could be re-emulsified by vigorous shaking.

Part II Amsterdam Emulsion—Sodium Silicate Mixture

Mixtures of Amsterdam emulsion and 40 Bé sodium silicate were prepared and these were mixed with sand, baked, and tested for strength and

EXHIBIT F-9—(Continued)

friability. Following are the percent by weight components of the Amsterdam emulsion and Table III shows the various ratios of Premix emulsion to 40° Bé sodium silicate prepared, the percentage by volume of sand used, and the strengths and friabilities obtained as compared to those obtained using Colas mixtures.

EXHIBIT F-9—(Continued)

Amsterdam Cracked Asphalt-Clay-Type Emulsion	
	% by Weight
Cracked Asphalt (10-20 pen.)	46.0
Clay emulsifier	3.0
Water	51.0

TABLE III

Amsterdam Emulsion—Sodium Silicate Sand Mixes

Sample No.	Ratio Emul./Sil.b.v.	% Dry Sand b.v.	Exp. Mixes Strength (Lbs.)	Exp. Mixes Friability (No Blows)	Equivalent Colas Mixes Strength (Lbs.)	Equivalent Colas Mixes Friability (No Blows)
HS-1	0.54	95.8	37.2	1	28	2—3
HS-2	0.82	90.9	60.0	5	42	4—5
HS-3	1.50	85.0	42.5	2	42	6
HS-4	0.50	93.0	50.0	3	50	6

[116]

EXHIBIT F-9—(Continued)

Strength and friability values, determined by establishing baking curves and obtaining the maximum strength points, show the Amsterdam Emulsion-sodium silicate cores to have strengths from equal to 44% higher than equivalent Colas cores, with two to three points lower friability.

Workability

Mixtures of Amsterdam emulsion and 40° Bé sodium silicate showed reasonable good viscosity and ease of handling. The emulsion-silicate mixture spread through the sand reasonably well, and gave fairly homogeneous colored mixtures. An extremely slight spotting could be detected upon close visual observation and microscopic examination showed the asphalt and/or emulsion to be unevenly distributed or not spread out in a thin film. The workability of the finished mixtures was fairly good, the mixtures being somewhat less clean to handle than similar Colas mixes and of the same molding consistency.

The solution of Amsterdam emulsion and sodium silicate creamed after several days standing, a portion of the sodium silicate settling out as a clean layer on the bottom, which could be remixed by shaking.

Carbon Black-Sodium Silicate Mixtures

Mixtures of carbon black and sodium silicate (40° Bé) were prepared replacing the asphalt content of Y-104 previously established by the carbon black.

EXHIBIT F-9—(Continued)

Following are the formulas used and the strengths and friabilities obtained.

TABLE IV

Carbon Black-Sodium Silicate-Sand Mixes.

Sample No.	Ratio Emuls/ Sil. b.v.	% Dry Sand b.v.	Exp. Mixes		Equivalent Colas Mixes	
			Strength (Lbs.)	Friability (No Blows)	Strength (Lbs.)	Friability (No Blows)
CBS-1	0.54	95.8	25	0	28	2—3
CBS-2	0.82	90.9	35	3	42	4—5

Cores prepared with Carbon Black-sodium silicate mixes show strengths of 80-90% of equivalent Colas mixes with about two points lower friability.

Workability

The mixtures of carbon black and sodium silicate did not mix with sand very easily due to poor spreading power, and microscopic examination of the mixtures showed uneven spreading of the carbon particles. The color of the mixed material was uniformly gray. The workability of the finished mix was poor, the material being extremely [117] dirty to handle and exhibiting a strong tendency to stick in the mold box.

4. Carbon Black-Amsterdam Emulsion—Sodium Silicate Mixture

Mixtures of sand, sodium silicate, and equal portions of both carbon black and Amsterdam emulsion sufficient to give quantities equivalent to a ratio of 0.82 were made using 90.9% by volume of sand.

EXHIBIT F-9—(Continued)

The resultant strength and friability of the mixtures was 43.5 and 2.0 respectively, as compared to 48 and 4 respectively for equivalent Colas mixtures.

The finished mixtures exhibited properties of workability intermediate between the carbon black and Amsterdam emulsion mixes for 0.82 ratio previously tested.

Conclusions

Part I Cores prepared with the series of six experimental emulsions CM-24 to 29 inclusive give reasonably comparable strengths and friabilities to those prepared with Colas Y-104.

All the emulsions cream to varying extents upon standing. Those prepared with Gum Tragacanth as emulsifier appear least viscous and most workable. The emulsion prepared with sodium silicate and Albino asphalt appears good from the standpoint of cleanliness.

Part II Cores prepared with Amsterdam emulsion and sodium silicate showed moderately higher strengths and lower friabilities than equivalent Colas mixes.

The workability of the Amsterdam emulsion is somewhat poorer than that of Colas from the standpoint of molding and cleanliness, and the mixture of emulsion and silicate cream after several days standing.

EXHIBIT F-9—(Continued)

Part III The substitution of carbon black for asphalt does not appear promising due to lower strength and very poor workability.

Signed,

E. H. SPOTSWOOD.

Approved,

W. J. YATES. [118]

EXHIBIT F-10

T.A.C. #462

Tech. No. S-212-39

Date: November 30, 1938

Shell Oil Company
Martinez Refinery

Subject: Core-Min Oil—Experimental Emulsions

Author: E. H. Spotswood

Summary:

The following report shows the results obtained on a series of eleven experimental core oil emulsions prepared at Shell Development Company. Included in the report are strength and general workability properties of the emulsions.

Conclusions:

Emulsions prepared with Gum Tragacanth or Emulsone B as emulsifying agents appear too viscous to be readily useable.

Lower Viscosity emulsions such as that prepared

with stearic acid and china clay but containing a greater concentration of sodium silicate (i.e. higher specific gravity) and more Premix Emulsion (Y-104), or its equivalent to adjust for friability, appear desirable in order to improve strength of mixtures in the optimum core oil-sand range (4 to 7% by volume core oil).

The emulsifying and weighing agents, stearic acid and China clay, respectively, appear to be a promising combination in view of the low viscosity emulsion obtained.

The use of the lower viscosity oils appears desirable with respect to ease of mixing emulsion with sand and retardation of drying on the bench.

The use of overhead albino asphalts and extracts appear promising in view of improved color and cleanliness.

The presence of sugar or carbon-black impart friability to the Core-Min Oil-sand mixes. [119]

Introduction:

Further to the research program being carried out at Shell Development Company to prepare a stable emulsion of sodium-silicate and asphalt emulsion, a series of emulsions prepared at Shell Development Company were examined and recommendations were given in order to more nearly approach the desired emulsions.

Presentation:

Since the testing of the last series of emulsions submitted by Shell Development Company (T.A.C.

Report #367), further emulsions have been tested.

Following are the various emulsions tested, and observations noted on some of their important properties.

Sodium Silicate—Petroleum Product Emulsions;
Sodium Silicate—Sugar Solution and Sodium Silicate—Carbon Mixture.

Following is a list of the eleven samples submitted with the percentage by weight of each. [120]

TABLE I
Experimental Core Oils

Sample No.	P-24	25	5	2	7	6	4	16	8	27	17
Components	% by weight Components										
20% b.w. China clay in H ₂ O.....	17.2										
1% b.w. Stearic Acid in H ₂ O (0.2% Dref ¹)	5.7										
5% b.w. Emulsone B in Sod. Silicate (32° Be ²) (0.1% Formalin)		69.4				69.5					
4% b.w. Gum Tragacanth in Sod. Silicate (40° Be ³) (.1% Formalin).....			57.5				57.0				
4% b.w. Emulsone B in Sod. Silicate (40° Be ³) (0.1% Formalin).....				57.0							
5% b.w. Gum Tragacanth in Sod. Silicate (32° Be ²) (0.1% Formalin).....					69.5				69.4		
20% b.w. Bentonite in H ₂ O.....								22.9			
Emulsone B (0.1% Formalin).....										3.2	
Sodium Silicate (32° Be) ²	53.5							53.5		67.8	
Colas Premix Y-104.....	23.5			43.0	30.5	30.5	43.0	23.5			
Albino Emulsion (overhead Dist) ⁴		30.6									
Albino Emulsion (residue) ⁵			42.5								

Table I—(Continued)
Experimental Core Oils—(Continued)

Sample No.	P-24	25	5	2	7	6	4	16	8	27	17
Components	% by weight Components										
Emulsion—cracked residue ⁶									30.6		
Shell Chemical wet carbon (46% H ₂ O)										29.0	
Granulated sugar											46.5
Sodium Silicate (40°Be) ²											53.5
<hr/>											
1. Powdered soap											
2. Sodium Silicate Na ₂ O : 3.22 SiO ₂											
3. Sodium Silicate Na ₂ O : 3.08 SiO ₂											
4. Emulsion—61% overhead furfural extract (s.g.=1.045; Visc.S.S.F.o140°F=1549)											
5. Emulsion—61% residue Duosol extract (s.g.=1.025, Pen/77°F=126)											
6. Emulsion—57% 4.5° A.P.I. Poso cracked residue (Visc.S.S.F./122=537)											

[121]

Equivalent Mixtures

Mixtures of sand and the various experimental core oils were made and these were tested for strength and friability (in two cases). Notes were taken on the general workability of the mixture.

The following Table II shows strengths of all the mixes prepared and friabilities of the carbon black and sugar mixes.

TABLE II
Experimental Core Oils

Baking Temperature 350°F. (indirect gas oven)

Baking Time 20 Minutes

Sample	Experimental mixtures			Equiv. Silicate-Colas Mixtures		
	% b. v. Core Oil Mixed with Sand	Strength (Lbs.)	Friability (No. blows)	% b. v. Core Oil Mixed with Sand	Strength (Lbs.)	Friability (No. blows)
P-24	11.4	24.0	—	7.0	40	4½
P-25	8.7	41.9	—	7.0	40	4½
P-5	7.1	16.0	—	7.0	40	4½
P-2	7.1	19.8	—	7.0	40	4½
P-7	8.7	12.6	—	7.0	40	4½
P-6	8.7	22.5	—	7.0	40	4½
P-4	7.1	13.8	—	7.0	33	3
P-16	11.4	17.1	—	7.0	33	3
P-8	8.7	21.6	—	7.0	33	3
P-27	8.3	28.8	1	7.0	48	6
P-17	4.3	29.1	0	7.0	23	2

The results from Table II show the mixtures to have varying degrees of strengths. In all cases except one (P-17) a greater percentage of core oil was incorporated with the sand (from 0.1% to 4.4% increase) and in all cases except one (P-25) the strength was considerably lower than sand mixture made with sodium silicate (40°Be) and Premix Colas Y-104.

The presence of sugar or carbon-black in place of asphalt in the core oil-sand mixtures produces an action similar to asphalt in producing friability after heating (friability test).

Workability

During the preparation of the various mixes, observations were made on the properties related to workability. The following Table III shows the important properties of the mixtures. [122]

TABLE III

Workability

Sample No.	Base Oil or Emul.	Pouring Consistency	Ease of Mixing With Sand	Color Sand Mix	Homogeneity of Mix	% b.w. Core Oil in Sand Mix	Consistency Sand Mix	Order of Drying on Bench* (10 Min.) (30 Min.) on Hands	Cleanliness
P-24	Y-104	Thin	good	brown	even	9.0	wet	5	4 slightly dirty
P-16	Y-104	Thick lumpy	poor	brown	lumps	9.0	wet	3	3 slightly dirty
P-25	overhead furfural ext.	Viscous just pourable	good	yellow	even	7.0	med.	1	1 clean
P-7	Y-104	Too viscous to pour	fair	brown	even	7.0	med.	4	5 slightly dirty
P-6	Y-104	Too viscous to pour	fair	brown	even	7.0	med.	6	6 slightly dirty
P-8	Cracked Residue	Too viscous to pour	poor	grey	specks	7.0	med.	2	2 fairly dirty

Table III—(Continued)
Workability—(Continued)

Sample No.	Base Oil or Emul.	Pouring Consistency	Ease of Mixing With Sand	Color Sand Mix	Homogeneity of Mix	% h.w. Core Oil in Sand Mix	Consistency Sand Mix	Order of Drying on Bench* (10 Min.)	Cleanliness on Hands (30 Min.)
P-5	Duosol Residue	Too viscous to pour	fair	yellow	even	5.7	dry	9	fairly clean
P-2	Y-104	Too viscous to pour	fair	brown	even	5.7	dry	7	slightly dirty
P-4	Y-104	Too viscous to pour	fair	brown	even	5.7	dry	8	slightly dirty
P-27	Carbon** Black	Too viscous to pour	poor	grey	specks	7.2	med.	-	dirty
P-17	Sugar**	Viscous	poor	white	even	4.2	dry	-	clean

*Small piles of each mixture placed on bench and observed at end of 10 and 30 minutes. #1 denotes least drying (best); #9 denotes most drying (poorest).

**Carbon-rendering materials not included under subject heading.

[123]

Results shown in Table III indicate the following:

(1) Most of the emulsions are too thick to be readily useable, while P-24 is too thin from the standpoint of active materials present. (Formula Table I and low strength with relatively high quantity core oil—Table II).

(2) From the standpoint of ease of mixing the P-25 and P-24 mixtures appear best. Since these are the thinnest emulsions, it appears that a reasonably low viscosity is important for ease of mixing. The viscosity or penetration of the grade of oil used is also undoubtedly a contributing factor.

(3) The homogeneity of the mixtures obtained and the consistency of the sand mix are functions of the quality and concentration of the emulsion respectively.

(4) The rate of drying on the bench appears to be affected by the grade of oil used in the emulsion, the less viscous oils appearing more desirable.

Conclusions

Emulsions prepared with Gum Tragacanth or Emulsone B as emulsifying agents appear too viscous to be readily useable.

Lower viscosity emulsions such as that prepared with stearic acid and china clay but containing a greater concentration of sodium silicate (i.e. higher specific gravity) and more Premix Emulsion (Y-104) or its equivalent to adjust for friability, appear desirable in order to improve strength of mixtures in the optimum core oil-sand range (4 to 7% by volume core oil).

The emulsifying and weighing agents, stearic acid and China clay, respectively, appear to be a promising combination in view of the low viscosity emulsion obtained.

The use of the lower viscosity oils appears desirable with respect to ease of mixing emulsion with sand and retardation of drying on the bench.

The use of overhead albino asphalts and extracts appear promising in view of improved color and cleanliness.

The presence of sugar or carbon-black impart friability to the Core-Min Oil-sand mixes.

Signed

E. H. EPOTSWOOD

Approved

R. W. McORNIE

EHS:HJ [124]

EXHIBIT F-11

Private and Confidential

T.A.C. No. 472

Tech. No. S-214-39

December 15, 1938

Shell Oil Company

Martinez Refinery

Subject: Core-Min-Oil—Effects of CO₂.

Author: E. H. Spotswood.

Summary:

The following report covers the results obtained

Exhibit F-11—(Continued)

on various core baking experiments relating to the effects of the presence of CO_2 gas in the baking ovens. The report has been divided into the following three parts:

Part I. To determine the effects of various concentrations of CO_2 gas in the baking oven on strength of the baked cores.

Part II. To determine the effect of the presence of glycerine, gas oil or clay (contained in the emulsion as a weighting agent) on the strength of the baked cores.

Part III. To determine the effect on strength of pre-drying the cores at room temperature in an atmosphere free of CO_2 gas before baking in an oven known to contain the gas.

Conclusions:

Part I. Experiments show that the decrease in strength of the baked cores is proportional to the amount of CO_2 present. (See Martinez Refinery Drawing #ITL-1121, Curve 1).

To insure completely satisfactory baking results, cores must be baked in ovens entirely free of CO_2 gas.

Part II. The presence of clay (used in the core oil emulsion as a weighting agent) does not appear to retard the action of CO_2 gas on the baked cores.

The presence of glycerine or gas oil (as a coating over the sand-core oil mixture) does not retard the action of the CO_2 gas on the baked cores.

Exhibit F-11—(Continued)

Part III. Pre-drying tends to nullify the action of the CO₂ gas to some extent but does not appear promising from a foundry standpoint. [125]

Introduction:

Previous reports on Core-Min Oil (T.A.C. Reports Nos. 228 and 79) have stated that cores made with Core-Min Oil must be baked in ovens free of CO₂ gas. Possible methods of circumventing this difficulty have been discussed in previous reports.

The purpose of these experiments was the continued investigation of possible methods of baking satisfactory cores in a direct gas oven.

Presentation:

In order to determine the relation between CO₂ gas concentration in the baking oven and strength of the baked core, the following work was carried out:

Part I. Relation of CO₂ to Strength

A small electric oven was rendered as air-tight as possible. A duct for introduction of CO₂ gas from a flask into the oven and another duct for drawing off samples of the oven atmosphere to the gas analyzer were run into the oven. A fan to circulate the gas in the oven was also used. The duct for drawing off the gas analysis samples was located about one inch over the baking cores and intermediate between them.

Two cores (strength bars) were baked in the

Exhibit F-11—(Continued)

oven for each determination, and temperature and CO₂ determinations were made approximately every 3 minutes.

The sodium silicate (40°Bé) and the Premix Emulsion Y-104 were added and mixed separately with the sand. (Duplication of procedure reported in T.A.C. 290).

The following formula was used:

Components	% by Volume
Sand (dry)	93.0
Sodium Silicate (40°Bé)	3.5
Premix Emulsion (Y-104)	3.5

Following in Table I is a typical set of readings obtained for one determination: [126]

TABLE I

CO₂ — Strength — Series — 1

Baking Time (Min.)	Oven Temp. °F.	% CO ₂
0	320	1.6
3	290	2.0
6	294	2.8
10	296	2.6
15	300	2.6
18	305	2.6
20	305	2.6

Bar No.	Strength (lbs.)
(1)	9.6
(2)	10.2

Average Values

Strength (Nos. 1 and 2) lbs.....	9.9
% CO ₂	2.6

Exhibit F-11—(Continued)

The following Table II shows average results of Series 1 to 8 inclusive. Martinez Refinery Drawing #ITL-1121, Curve 1 shows the results graphically.

TABLE II

CO₂—Strength

Baking Time—20 Minutes

Series No.	Oven Temp. °F.	% CO ₂	Strength (lbs.)
1	301	2.6	9.9
2	296	1.6	12.9
3	300	0.0	26.1
4	297	0.8	19.8
5	295	6.6	5.2
6	307	7.0	5.4
7	304	4.0	7.2
8	303	2.6	8.5

[127]

Inspection of Table II and Martinez Refinery Drawing #ITL-1121, Curve 1 will show that the strength decreases quite rapidly with increase in CO₂ content of the baking atmosphere, especially in the low CO₂ concentrations. This curve shows very definitely that even small concentrations of CO₂ gas are not tolerable, since the curve falls off so steeply in the lower concentrations.

Part II Effects of Clay, Glycerine and Gas Oil on Strength

(a) Clay.

Since Shell Development Company has been working on emulsions containing an appreciable

Exhibit F-11—(Continued)

amount of China clay (see T.A.C. Report #462), it was thought that possibly the clay would have a beneficial effect in counteracting the action of the CO₂ gas (possibly as a coating agent).

An emulsion containing clay and having the following formula was tested in a manner similar to that described previously. (Part I).

Exp. Core Oil Emulsion

Components	% by Weight
Sodium Silicate (40° Be').....	46.8
Premix Emulsion (Y-104).....	34.8
China Clay	12.7
2.5% Stearic Acid in H ₂ O (½% Draft).....	1.7
Water (viscosity adjuster)	4.0

Since the above emulsion contains only 81.6% of active ingredients as compared to the materials previously used (sodium silicate and Premix Emulsion Y-104) an extra quantity of core oil was used to compensate for this difference. The following sand-Core Oil mix was prepared:

Components	Formula	% by Volume
Sand (dry)		91.6
Exp. Core Oil Emulsion.....		8.4

[128]

The cores (strength bars) were baked in the electric oven under controlled concentrations of CO₂. Following in Table III are the results obtained.

Exhibit F-11—(Continued)

TABLE III
CO₂—Clay—Strength

Series No.	Oven Temp. °F.	% CO ₂	Strength (lbs.)
1	305	0	23.0
2	305	1.0	14.0
3	305	2.6	8.8

Inspection of Martinez Refinery Drawing ITL-1121, Curve 2 shows the curve plotted from the above data in Table III to be approximately parallel to the curve plotted from Table II data. Since the curve from the above data drops at the same rate as the curve determined using straight sodium silicate and Y-104 (Part I), it is apparent that the clay exerts no influence in nullifying the effects of the CO₂ gas.

(b) Glycerine and Gas Oil.

To determine the effect of glycerine or gas oil on strength in the presence of CO₂, a series of cores were baked using the same core oil and sand mix as used in Part II(a). To the finished mixtures in each case (sand and core oil) glycerine and gas oil were added to the amount of 0.5 and 1.0% by weight on the total mix.

The following Table IV shows the results obtained:

TABLE IV
Formula

Components	% by Volume
Sand (dry)	91.6
Exp. Core Oil Emulsion.....	8.4
Glycerine/or gas oil.....	0.5 and 1.0% by wt. on total mix

Exhibit F-11—(Continued)

Baking Time—20 minutes.

Series No.	Coating Agent	% by wt. on Total	% CO ₂	Strength (lbs.)
1	Glycerine	0.5	1.4	10.0
2	Glycerine	1.0	1.4	7.7
3	Gas Oil	0.5	1.4	9.4
4	Gas Oil	1.0	1.4	8.0

The results from Table IV have been plotted on Martinez Refinery Drawing #ITL-1121 for comparison purposes. It is evident that both the glycerine and gas oil give approximately the same reductions in strength in the 0.5% and 1.0% concentrations. Comparison of these points with curve 2 shows that the glycerine or gas oil effects drops of 2.5 and 4.5 lbs. respectively. Since previous experimental data has established that drops in strength of approximately the magnitude obtained in this case may be expected with 0.5 and 1.0% additions of gas oil in ovens free of CO₂ gas, it is evident that the protective coating mediums have little effect in nullifying the action of the CO₂ gas.

Part III Pre-Drying

The possibility of pre-drying the cores in an atmosphere free of CO₂ gas for a long enough period to build up a crust to protect the cores (See T.A.C. Report #228) appeared promising.

Cores were molded from a mixture having the same formula as that used in Part I. The cores

Exhibit F-11—(Continued)

were laboratory air dried for 24 and 48 hours respectively, and then baked for 20 minutes.

Following in Table V are the test results obtained:

TABLE V

Baking Time: 20 minutes in CO₂ atmosphere.

Sample No.	% CO ₂	Air Drying*	Strength (lbs.)
		Period (Hrs.)	
1	3.0	24	16.5
2	1.0	48	15.0

*Temperature 65-85° F.

[130]

These points have been plotted on Martinez Refinery Drawing #ITL-1121 for comparison. The pre-drying period of 24 hours raises the strength from 9 to 16.5 pounds (Comparison Curve 1), while 48 hours pre-drying lowers the strength from 16.5 to 15 pounds at 1% CO₂. The latter decrease may be caused by over-baking (48 hours air-drying plus 20 minutes in oven) or too much air-drying (See Table VI).

The possibility of using this pre-drying in combination with oven baking in actual foundry use does not appear very promising, in view of the necessity of close control between air and oven drying, the large amount of extra work required in shifting racks, etc., and especially the considerable amount of floor space required.

To test the possibility of 100% air-drying, a series of the same cores were left for varying

Exhibit F-11—(Continued)

periods of time and tested for strength. The following Table VI gives the results obtained:

TABLE VI
Air Dried Strength

Sample No.	Air Drying (1) Period (Hrs.)	Strength (lbs.)	Strength (2) (lbs.)
1	28.5	2.7	26.0
2	46.5	5.1	26.0
3	144.0	5.1	26.0
4	144.0	9.4	26.0
5	144.0	8.7	26.0

(1) Lab. Air Temperature 65-85° F.

(2) Strength baked 20 min. indirect gas oven.

The results from the above Table VI show that the air-dried cores attain only about 36% of the strength of the baked cores.

Conclusions:

Part I. Experiments show that the decrease in strength of the baked cores is proportional to the amount of CO₂ present. (See Martinez Refinery Drawing #ITL-1121, Curve 1). [131]

To insure completely satisfactory baking results, cores must be baked in ovens entirely free of CO₂ gas.

Part II. The presence of clay (used in the core oil emulsion as a weighting agent) does not appear to retard the action of CO₂ gas on the baked cores.

The presence of glycerine or gas oil (as a coating over the sand-core oil mixture) does not retard the action of the CO₂ gas on the baked cores.

Part III. Pre-drying tends to nullify the action

Exhibit F-11—(Continued)

of the CO₂ gas to some extent but does not appear promising from a foundry standpoint.

Signed

E. H. SPOTSWOOD

Approved

R. W. McOMIE

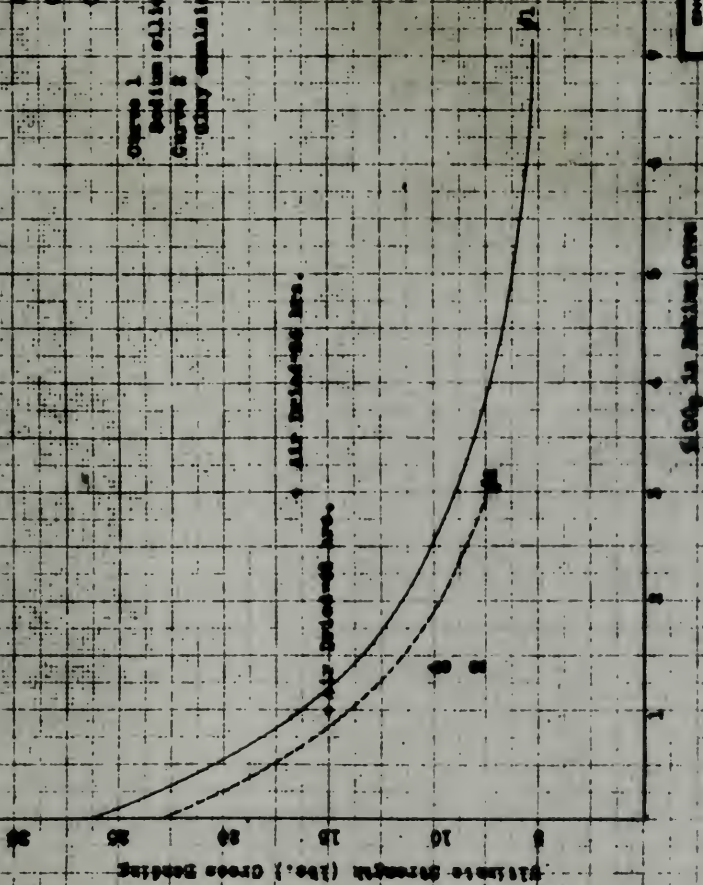
EHS:C. [132]

Results show that maximum
strength is obtained at
medium temperatures only

- ▲ 25 asphalt
- 25 asphalt
- 25 oil
- 105 oil

Curve 1
Sodium silicate - P-104 - sand

Curve 2
Clay emulsion (mod. sil-P-104) - sand



ENG. DEPT. SAGELL OIL CO. MARTINEZ

CARBON DIOXIDE-STRENGTH CURVES

DATE: 1-11-59
BY: [Signature]
CHECKED: [Signature]
171-1118-0

EXHIBIT F-12

Shell Oil Company, Incorporated
Martinez Refinery

T.A.C. Report #561

Tech. No. S-241-39

March 23, 1939

Subject: Core Min Oil.

Author: E. H. Spotswood and W. H. Spiri.

Summary:

The following report tabulates the experimental work done and the results obtained on the various Core Oil emulsions prepared by Shell Development Company to date. The work reported herein is a continuation of the work reported in T.A.C. Report No. 462. The data contained in this report represent that portion of the work performed by Messrs. Spiri and Spotswood on the application of the various core oils to foundry practice. The development of the problems encountered at the foundry, i.e. pellet formation, softening of cores due to water absorption, and necessary relations between strength and friability, made it imperative that a considerable portion of the application work be carried out in the laboratory. Preparation of the various experimental core oils was carried out by the staff of the Shell Development Company at Emeryville.

Conclusions:

Foundry experiments indicate that to date a sat-

Exhibit F-12—(Continued)

isfactory core oil emulsion which is workable in the foundry has not been developed.

Core oil emulsions containing 40-50 penetration S. R. asphalt (Y-104) as a base are not satisfactory in that they form pellets when mixed with the sand.

Core oil emulsions containing low viscosity oils as a base are not satisfactory when mixed with sand as they do not meet requirements for both handling strength (toughness of core) and friability after casting.

Experiments show that cores made with Core Oils containing sodium silicate and various combinations of asphalts (or oils) and necessary emulsifying and weighting agents are softened to a varying degree by storage under high relative humidity conditions. Cores made with Core Oil Emulsions containing high penetration asphalts or oils as bases soften to such an extent that they are unfit for casting.

The core oil-sand mixtures containing low penetration asphalts appear most resistant to humid storage conditions and can be used for casting even after exposure to humid conditions.

Impact tests indicate that the penetration asphalts lend more toughness to the cores than low viscosity oils. [134]

Introduction

In continuation of the program being carried out by the Shell Oil Company and the Shell Develop-

Exhibit F-12—(Continued)

ment Company to develop a suitable core oil, further work has been completed since the issuance of the last report (T.A.C. #462).

At the date of writing of T.A.C. Report No. 462, core oil emulsions prepared with sodium silicate and Y-104 and containing stearic acid and china clay as emulsifying and weighting agents respectively appeared promising. A reasonably stable emulsion was made by Shell Development Company using the above mentioned components. (See Emeryville Report #4498).

During the application of this emulsion to foundry practice numerous problems were encountered. Various combinations of oils and sodium silicate were tried out in an attempt to remedy the difficulties encountered. The following report covers the various mixtures investigated.

Presentation:**A. Y-104 Core Oil Emulsion**

Experimental work at Shell Development Company showed that a stable emulsion of Y-104 and 40°Bé sodium silicate could be produced using china clay and stearic acid as weighting and emulsifying agents.

Small sample batches of Core oil emulsion were prepared having the following formula. These samples were not deaired (necessary for complete stability).

Exhibit F-12—(Continued)

Experimental Y-104 Core Oil Emulsion

Components	Per cent by Weight
Sodium Silicate 40° Be' ¹	48.0
Premix Emulsion Y-104.....	35.4
China Clay	10.5
215% b.w. Stearic Acid in Water (1½% Dreft)	1.7
Extra water ²	4.4

(1) Sodium Silicate $\text{NaO}_2:3.22 \text{ SiO}_2$.

(2) Extra water required to dilute to pouring consistency.

Samples were tested in the foundry and appeared to be reasonably satisfactory from the standpoint of mixing and general workability.

On the basis of these results, a large batch (17 gal) of Core Oil emulsion was prepared using a mixer obtained from the Shell Development Company. (Refer Shell Development Company memorandum of January 24, 1939, "Core Min Oil", Sketch #1 Mr. W. H. Spiri to Mr. J. F. McSwain). Samples of this [135] emulsion were then tested at the Vulcan Foundry. It was found that the Y-104 Core Oil emulsion would not mix properly with the sand, as it formed a considerable amount of pellets which could not be dispersed. Since the large batch prepared was not considered as good an emulsion as those prepared in smaller amounts in the laboratory, it appeared that possibly this poorer emulsion might be causing the pellets. The small batches prepared previously in the laboratory were again tested and appeared unsatisfactory as they formed

Exhibit F-12—(Continued)

pellets also. Further test work over a period of about one week showed that the Core emulsions mixed without difficulty immediately after manufacture but deteriorated with time, and after a period of storage would not mix evenly with the sand without forming pellets.

Further work on Y-104 Core Oil emulsions was dropped at this time in view of the undesirable formation of pellets which made it unfit for use.

B. Y-101 Core Oil Emulsion

As a possible method of circumventing the pellet difficulty, it was suggested that a high penetration or low viscosity asphalt be used as the base for the emulsion.

Samples of Core Oil emulsion containing Premix Emulsion Y-101, Sodium Silicate 40° Bé, Stearic acid, and china clay were prepared by Shell Development using a formula similar to that used with Y-104 and these emulsions were tested and found unsatisfactory as they formed pellets in the sand which could not be readily dispersed.

C. SC-2 Road Oil Core Oil Emulsion

Sample core emulsions were prepared using SC-2 road oil as the base oil in the emulsion. Foundry experiments were run on this emulsion and it was found that the emulsion showed a tendency to form pellets in the sand but these could be dispersed due to the low viscosity of the oil. However, this emulsion was found undesirable in view of the fact that a very considerable amount of light ends were

Exhibit F-12—(Continued)

evolved during the baking procedure. These light ends appeared to adversely affect the strength of the cores, the lower sides of certain shaped cores which had been baked in driers appearing soft.

D. Special SC-2 Core Oil Emulsion

In order to obtain an asphalt blend having a viscosity similar to SC-2 road oil and also one which, when incorporated into the core oil emulsion, mixed with sand, and baked would not evolve a considerable amount of light ends. A blend of bulk distillate (S.S.U.=60/210° F.) and Y-10 asphalt was used. Core oil emulsions were prepared using this blend and having the following approximate formula. [136]

Special SC-2 Core Oil Emulsion

Ratio by vol. Premix Emulsion to			
40° Be' sodium silicate.....	0.5	0.75	1.0
Components	% by Weight Components		
Special SC-2 Premix Emulsion*.....	22.2	29.3	34.4
Sodium Silicate (40° Be').....	61.0	53.0	47.3
3.2% b.w. Stearic Acid in water			
(1½% b.w. Dreft)	7.8	6.8	6.1
China Clay	9.0	10.9	12.2

*Premix Emulsion

60% b.w. blend (70% b.w. 60/210 bulk dist. 30% b.w. Y-10)

40% dil soap solution (Rosin Oil Soap & Casein)

Preliminary foundry tests with this material indicated the core emulsions mixed readily with the sand, showed practically no sticking in the mold box,

Exhibit F-12—(Continued)

was clean to handle, and in general appeared promising.

Laboratory tests were then conducted to determine strengths for various core oil-sand mixtures. The minimum workable foundry strength is estimated to be 25# cross bend strength. The following Table I shows strength data.

TABLE I

Special SC-2 Core Oil Emulsion

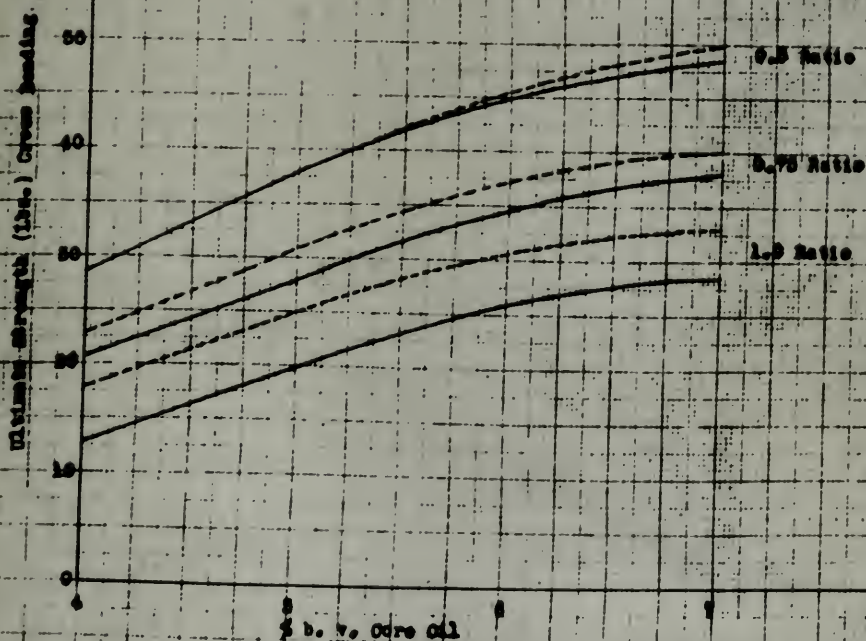
Strengths

Series No.	Baking Temperature		300-310°F.		
	Baking Time		17 min.		
	Mixtures B. V. Sand	Core Oil	Core Oil % B.V.	Ratio B.V. Emul/Sil.	Cross Bending Strength (lbs.)
1	19	1	5.0	0.50	38.1
2	16	1	5.9	0.50	44.4
3	13-2/7	1	7.0	0.50	48.4
4	19	1	5.0	0.75	27.9
5	13-2/7	1	7.0	0.75	38.1
6	19	1	5.0	1.00	19.7
7	13-2/7	1	7.0	1.00	28.6

The following Martinez Refinery Drawing No. 1 TL 1144 shows the results graphically. Comparison of those curves with those established for Premix Emulsion Y-104 and sodium silicate separately (Data from T. A. C. No. 290) which [137] data are consid-

Special 30-2 Core Oil
 T-104 Sodium Silicate
 (TAC Report 200)

Baking Temperature
 200-210°F.



ENG. DEPT.	SHELL OIL CO.	MARTINEZ
STRENGTH - MIX CURVES		
CORE-MIX OIL		
ASPHALT LABORATORY		
SCALE: 25 SHOW	CHK APPR: JAH	
DATE: 5/27/39	APPROVED:	
DRAWN: JAH:CV	17L-1144-0	
CHECKED:		

Exhibit F-12—(Continued)

ered the standard for comparison, shows the special SC-2 emulsion to be lower in strength than the Y-104 silicate mixes especially in the higher ratios. The special SC-2 Core emulsions shows approximately 28% and 11% lower strength for the 1.2 and 0.75 ratios, respectively, as compared to the Y-104 silicate mixes.

Since the strength curves showed reasonably good values, (i.e., above the 25# minimum limit) two batches (0.5 and 0.75 ratio) of the material were prepared at Martinez Refinery in the mixer borrowed from Shell Development Company. A quantity of this emulsion was taken to the foundry and work was begun on a semi-commercial run of castings.

It soon became evident that the baked cores were softening in storage. It was at once suspected that the high relative humidity (rainy weather) prevailing at the foundry at this time was causing the trouble, the cores softening due to absorption of water by the sodium silicate (Hygroscopic). Since the cores became so soft after a period of two or three days as to be unusable, further work at the foundry was stopped and the work again started in the laboratory to determine a remedy for this difficulty.

E. Humidity Effects

In order to investigate the effect of humidity, it was decided to measure the drop in strength over a period of high humidity storage. In each case, six

Exhibit F-12—(Continued)

core bars were baked from each mixture, time and temperature of baking being the same for each bar. Three bars were broken when cool and three bars were stored for 20 hours in a covered flat pan partly filled with water. The relative humidity was estimated to be about 60 to 65% at 70° F. These conditions were established as a reasonable approximation of what might be expected at the foundry and to determine which mixtures might stand up under the above conditions. The apparatus as such, therefore, was not intended to be used for determining small quantitative differences in behavior between the core oil and its various components.

The following results were obtained.

TABLE II

Humidity—Strength Relations

Estimated rel. hum. 60-65% @ 70° F.

* Series No.	Base Oil in Emul.	Type Binder in Sand	Strength (lbs.)		% Drop in Strength
			Cross Bending Original	20HRS.	
1, 7, 14, 18	Sp SC-2	0.5 Core Oil	.....33.7	7.1	79.0
5	Sp SC-2	Sp SC-2 Premix Emul.—40° Be' Silicate Sepa- rate	.....27.3	6.0	78.0
10, 15, 17	Y-104	0.5 Core Oil	.....38.3	10.2	74.0
2, 24, 25	Y-104	Y-104 Silicate, Separately	....46.8	39.0	17.0

*Each series number represents one complete set of six cores.

[139]

Exhibit F-12—(Continued)

Various combinations of bulk distillate (S.S.U. 60/210°F.), 15 and 55 penetration albino asphalts, Y-101, and straight sodium silicate were investigated.

In general, the results of these experiments seemed to indicate that sand mixtures prepared with Premix Emulsion (Y-104 or similar low penetration base asphalts) and sodium silicate separately gave small drops in strength while sand mixes prepared with core oil emulsions containing stearic acid and china clay, or premix emulsion (Made from low viscosity oils) and sodium silicate separately gave poor results. No definite conclusions could be drawn due to variation of test conditions.

To establish the effect on strength of the various components in the core oil emulsions under high humidity storage conditions, equipment was set up at Emeryville. A constant temperature oven containing a pan of water and salts was used in order to obtain a reasonably constant humidity condition without excessive expenditures for equipment.

Various series of tests were performed, the results of which although not entirely in agreement in all cases* seemed to indicate general trends.

In view of the general trends obtained, it was decided to temporarily eliminate the stearic acid and rosin oil soaps from the core oil emulsion. The

*It was found that the humidity varied considerably with external weather conditions (outside the constant temperature oven).

Exhibit F-12—(Continued)

elimination of the stearic acid was also found beneficial in that an adverse thickening action of the emulsion by the stearic acid was eliminated.

Other combinations of core oils including various components such as linseed oil, sulphonated olive and castor oils, 15 penetration albino cutback with naphtha, cobalt naphthenate, and glycerine were investigated for various influences. The net result of the investigation of these components seemed to indicate that the addition of about 2% by weight of glycerine and 1% by weight of sulphonated olive or castor oils might be beneficial from the standpoint of increased resistance to high humidity and better spreading in the sand mix respectively. Although these indications were not definitely conclusive, it was decided to prepare core oils containing these components and test them in the foundry.

F. Foundry Experiments

Emulsions prepared in the 0.5, 0.75, and 1.0 ratios having the following formulas were considered to be the best developed to date.

Ratios	0.5	0.75	1.00
Components	% by Weight Component		
Premix Emulsion (Sp SC-2).....	23.0	29.7	35.0
Sodium Silicate 40° Be'.....	63.5	54.7	48.6
China Clay	10.5	12.6	13.4
Glycerine	2.0	2.0	2.0
Sulphonated Castor Oil.....	1.0	1.0	1.0

[140]

Samples of these emulsions were taken to the foundry for testing. San-Core Oil mixtures were

Exhibit F-12—(Continued)

made using the 0.5, 0.75 and 1.0 ratio core oils. Three cores were made from each of the following job numbers from each mixture, two cores being intended for casting and one for inspection.

3—cores Job. No. 2771 Merco Nordstrom 2" valve

3—cores Job. No. 146 Burner

3—cores Job. No. 5B-8794 Caterpillar Engine part

After baking, the cores were inspected. The burner cores had not knit together (the two halves of the core) and fell apart when handled. The valves and engine parts were sufficiently strong in the 0.5 ratio mixture but were "soft" in the 0.75 and 1.0 ratios. During preparation of the valve cores for casting (blacking process-coat with plumbago solution) the 1.0 ratio cores fell to pieces. The engine part cores and 0.5 and 0.75 valve cores were cast and in all cases the cores were not friable enough to be easily removed from the casting.

These tests showed that the Sp SC-2 Core oil emulsion-sand mixtures obtainable were either too low in strength for handling when the friability was right or not friable enough when the handling strength was satisfactory.

On the basis of these tests, the Special SC-2 emulsion was considered unsatisfactory.

G. Strength and Toughness

Previous preliminary tests (Bi-Weekly Progress Report #89—Jan. 15-31, 1939) had indicated

Exhibit F-12—(Continued)

that possibly the difference in handling strength of cores having approximately the same cross bending strength but different oil components in the emulsions might be due to the viscosity of the oil used. A simple impact test was used and this test showed that the core emulsions made with penetration asphalt had considerably more resistance to impact than the low viscosity oil emulsions.

In order to determine this difference, a weight of 454 grams was dropped vertically through guides varying distances starting at $\frac{1}{2}$ cm and increasing each height of drop by $\frac{1}{2}$ cm until the specimen under test snapped off. The specimen under test consisted of a 2 inch cantilever beam 1" by 1" in cross section (cross bending test cores). The cantilever beams were cores of the various mixtures. The cumulative number of blows (assuming 0.5 cm as unity) was recorded and also the height reached in each case before fracture. Six beams were broken for each determination. The following Table III shows the results obtained. [141]

TABLE III

Core Toughness

Series No.	Ratio b.v. Emul/Sil 40° Be°	Core Oil % b. v.	Base Oil in Emul.	Strength (Lbs.)	Cumula- Height tive No. Energy of fail- Blows Absorbed ure on based/½ GR-CM		
1	0.50	5.50	Y-104*	42.0	3½	14	6356
2	0.50	6.25	SP SC-2	37.8	2	5	2270
3	1.00	5.50	Y-104	29.1	1½	3	1362
4	1.00	6.25	SP SC-2	22.5	½	1	454

*In each case Y-104 and sodium silicate used separately.

Exhibit F-12—(Continued)

Inspection of the above Table III will show that variation of the base oil in the emulsion exhibits a considerable influence on the resistance to impact (toughness). It is, therefore, evident that the resistance to handling of the cores and resistance to failure in the mold box as measured by cross bending strength of the core are a combination of two different influences, the resistance to cross bending being largely determined by the sodium silicate, while the resistance to handling is determined both by the oil component and the silicate component.

Signed E. H. SPOTSWOOD

W. H. SPIRI

Approved C. H. BRITTEN

R-196 [142]

EXHIBIT G

September 6, 1939

Shell Oil Company, Inc.

Shell Building

San Francisco

Gentlemen: Attention Mr. L. G. McLaren

Re—Ruddle & Peck-Shell Oil Co.

CONTRACT OF APRIL 8, 1938

This will acknowledge receipt of your communication of August 18, 1939, together with enclosures mentioned as forthcoming in your communication dated July 26, 1939.

We have referred to our attorneys the entire matter of your above communications and our entire file relating to the negotiations leading to the preparation of, and to the activity under, the contract between your concern and ourselves dated April 8, 1938, as well as a copy of said contract; we have asked our attorneys to consider the same and give us an opinion, with particular reference to the attitude we should take toward said contract and your concern in the light of your said letter of July 26 last.

We have now been advised with regard to our position by our counsel, and are accordingly reaffirming our statement of July 26, 1939, that we wholly refuse to accept your purported "notice of cancellation" as such, and hereby expressly demand that you fully and faithfully comply with each and every term and condition, on your part, of the contract of April 8, 1938, between ourselves, failing which you may rely upon us to take all necessary steps to insure the performance of said contract by you.

It is our impression from the correspondence that by some strange reasoning your administrative division has been directed to conclude that the contract is capable of being canceled, as you put it, "because of entire failure of consideration". This is despite the fact that prior to presentation by yourselves of the contract, as drawn by your Legal Department, your technical staff devoted some three months to the study, analysis and commercial com-

parison of the disclosures of ourselves. We have long possessed copies of the reports made by your technical division prior to the date of our contract with you, in which our product is reported favorably, and the representations made by us with regard thereto are fully substantiated. Problems relating to the sale of the product, particularly the method of packaging, were described by us when we first mentioned the subject to [170] you, and have been the subject of constant study by both your concern and ourselves, pursuant to the provisions of the contract which contemplate improvements conceived for the benefit of the contract by either us or yourselves, from time to time.

Following the favorable technical report independently prepared by yourselves, you submitted a contract to us which, with a single fundamental exception, was executed without modification. We might add, as you were informed at the time, we entered into the contract without benefit of counsel, although from our own meager knowledge of such practices we recognized the presence in the agreement as originally drafted of a lack of protection to us in the event your concern developed a foundry product competitive to that presented by us. In fact, both your representatives and ours discussed and commented on the probability that, as is usual in the development of new products and inventions, improvements would present themselves regularly to those working with the original disclosure, and that, as occasionally happens, radical variations of the

fo

original disclosure, to carry out its intended purposes, might occur. Accordingly, throughout the contract, the same was broadened to provide that our rights, including our right to royalty, should flow not only from the product as actually presented, but also from the product as it might from time to time be improved, during the term of the contract, and in that connection the agreement was re-worded by your representatives, at our request, to provide expressly that we should receive royalty on, and be entitled to exclusive property right in, subject to the license of course, "all products for foundry use" manufactured, used or sold, or caused to be manufactured, used or sold, by your company, during the entire term of the agreement. It was also expressly provided, in this connection, that reference to your company included the inurement of benefits and burdens of the contract to the parent corporation, affiliates and subsidiaries of your organization.

The contract as executed on April 8, 1938, after the intensive examination permitted, contained a clause permitting you to cancel at any time within six months after the execution thereof, whereby you could relieve yourselves of all obligation under the contract. Shortly before the expiration of the six-month option period, your representatives requested and were granted three successive ten-day extensions of the option period, prior to the expiration of the last of which we were duly notified by you that you elected to continue under the contract as originally drawn, and without the benefit of modi-

fication thereof in a manner which had been the subject of some conversation between us in the fall of 1938. [171]

During all of the period from April 8, 1938, to July 26, 1939, with the exception perhaps of a few days just prior to the last mentioned date, your representatives regularly—and by this we mean several times a week—assured us that products falling under the contract were satisfactorily demonstrated by you; that commercial “bugs” were being worked out; and that you were about to perform the diligence clauses of the contract, calling for wide-scale commercialization of the products in which we were interested. The term most frequently used by your representatives was that the products were “ready to be taken east” for marketing.

It was therefore a considerable surprise and shock to us to discover that you have decided at this late date, July 26, 1939, after you have been operating under the contract for at least fifteen months, and have had the benefit of our disclosures for the best part of two years, to repudiate all of your representations and attempt by the truly preposterous methods indicated to relieve yourselves of your legal burdens and duties, presumably in good faith accepted by you under the contract. This was particularly distressing, and impossible of understanding, in the light of the fact that we have known for some time prior to the date of your attempted move toward cancellation, that in the course of working with and developing our product, as provided by the con-

tract, you had made contemporary discoveries which enable you to propose what your employees and representatives described as a product which incorporates all of the advantages of our original disclosure and possesses additional commercial properties of a nature which we had all been seeking. It was recognized by us then for the first time that the whole purpose of your attempt at cancellation—and if we were wrong in this, we trust that you will try to convince us of that fact—was and is to endeavor to retain exclusively for yourselves, without accounting for royalty thereupon to us, and without transferring the same to us upon cancellation, as provided by the agreement, the so-called “new developments” of a commercially competitive product for foundry use, which is clearly our property and is made the subject of accounting under the agreement.

So that this matter may be understood, our information with reference to your development of our product into a form which you seek to retain for your exclusive benefit, despite your obligations under the contract, was fully substantiated by you in your official letter to us dated August 18, 1939, supplementing your so-called “notice of cancellation”.

The above will suffice to give you a brief summary of the facts of the situation, all of which can be fully substantiated from the files of this matter in our possession, from the reports which you have now, belatedly, partially furnished in the manner required by the agreement of April 8, 1938. [172]

We now turn to the matter of our position, and so that there may be no question about that position, we make our demands as follows:

1. That pursuant to the agreement of April 8, 1938, you furnish us at once with a complete transcript of all additional data relating to the subject matter of the contract, and in this connection furnish us with complete technical information on the product referred to by you in the last paragraph of your letter of August 18, 1939;

2. That you promptly withdraw your purported "notice of cancellation" and reaffirm your intentions to proceed in good faith under the agreement of April 8, 1938, now in force and outstanding between us;

3. That you advise us promptly as to what commercial steps you have taken and contemplate taking to develop the subject matter of said contract in a form which will bring about early monetary return to us under the royalty provisions of the contract.

In the event you fail, neglect or refuse to comply with each of the above points, and particularly fail to advise us of your intention to conform to requirement 2 above, we will construe your silence, with your tacit consent thereby, as a deliberate breach of contract, superimposed upon the many breaches thereof heretofore occurring, whereupon please be advised that we will authorize our attorneys promptly to proceed at law and in equity to secure for us all relief to which we may be entitled,

and in that connection to secure a decree of court of competent jurisdiction compelling specific performance of your obligations under the contract, for the full term thereof.

We will expect your full response to the above by September 15, 1939, failing which your silence will be interpreted in the manner indicated.

Yours very truly,

LYDELL PECK

ALLAN B. RUDDLE [173]

EXHIBIT H

Letterhead of
SHELL OIL COMPANY
Shell Building
San Francisco

September 14, 1939

Mr. Allan B. Ruddle
Mr. J. Lydell Peck
Crocker Building
San Francisco, California

Gentlemen:

We wish to acknowledge receipt of your letter of the 6th September, 1939 having reference to our letter to you of July 26, 1939. We have given consideration to the matters set forth in your letter and have not found any reason for our in anywise withdrawing from the position set forth in our let-

ter of the 26th July, 1939. However, it is our desire and intent to give further consideration thereto and when this investigation is completed we will communicate with you further. In the meantime, however, our notice of rescission dated the 26th July, 1939 must stand.

Yours very truly,
SHELL OIL COMPANY,
INCORPORATED
(s) L. G. McLAREN [174]

EXHIBIT I

[Copy]

September 20, 1939

Shell Oil Company, Inc.,
Shell Building
San Francisco, California

Attention Mr. L. G. McLaren

Gentlemen:

This will acknowledge receipt of your letter dated September 14, 1939, wherein you state that while you wish to stand upon your letter of July 26, 1939, in which you attempt to rescind the agreement between your concern and ourselves dated April 8, 1938, nevertheless it is your "desire and intent" to give further consideration to the points raised in our letter of September 6, 1939; and that "when this investigation is completed" you will communicate with us.

We will be pleased to receive any further comments you may care to make, and are of the definite opinion that if you will make a thorough investigation of this matter with the advice and under the direction of your general counsel, you will recognize the justice of our position and the many equities existing in our favor.

While it is our intention to pursue this matter by way of litigation if necessary, we would of course appreciate an amicable disposition of the matter, if you are so inclined.

We repeat we do not acquiesce in your statement, in fact we deny your claim that the contract of April 8, 1938, was without consideration and deny your right to cancel and terminate said agreement.

Will you kindly advise when we may expect further word from you—which we hope will be soon. Please fix the date.

Yours very truly,

ALLAN B. RUDDLE

J. LYDELL PECK

Filed Oct. 25, 1939. [175]

[Title of District Court and Cause.]

DEFENDANTS' ANSWER

Now comes Shell Oil Company, Incorporated, a corporation, and Shell Development Company, a corporation, defendants above named, and by this

answer to the complaint on file in the above entitled cause admit, deny and allege as follows: [176]

I

Answering paragraph I of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

II

Answering paragraph II of said complaint, defendants and each of them admit the allegations in said paragraph contained.

III

Answering paragraph III of said complaint, defendants and each of them admit that diversity of citizenship of the parties to this cause exists, but defendants and each of them allege that the matter in controversy does not exceed, exclusive of interest or costs, or otherwise or at all, the sum or value of Three Thousand (\$3,000.00) Dollars, and therefore deny that the jurisdiction of this court is based on the alleged fact that the matter in controversy exceeds, exclusive of interest and costs, the sum or value of Three Thousand (\$3,000.00) Dollars, or that this court has any jurisdiction of this cause.

IV

Answering paragraph IV of said complaint, defendants and each of them admit the allegations in said paragraph contained.

V

Answering paragraph V of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each of them allege that no alleged confidential disclosure or disclosures of any thing or things was or were at any time or at any place made by or for plaintiffs or either of them to or received from plaintiffs or either of them or acquiesced in by Shell Oil Company, or defendants or any of them, or otherwise or at all. [177]

VI

Answering paragraph VI of said complaint, defendants and each of them admit that on April 8, 1938, Lydell Peck and Allen B. Ruddle granted to Shell Oil Company a license to make, use or sell the thing or things covered by applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237, said Shell Oil Company being a predecessor in interest of defendant herein, Shell Oil Company, Incorporated, and defendants admit that the document annexed to said complaint and marked "Exhibit B" is a copy of such license agreement but defendants and each of them specifically deny each and all of the remaining allegations in said paragraph contained.

VII

Answering paragraph VII of said complaint, defendants and each of them admit that on or about

November 2, 1938, a letter was sent to Mr. R. C. Hackley, Jr., by Bernard J. Gratama reading substantially like "Exhibit C" attached to said complaint, but defendants and each of them specifically deny each and all of the remaining allegations in said paragraph contained.

VIII

Answering paragraph VIII of said complaint, defendants and each of them admit that subsequent to April 8, 1938, and until April 1, 1939, Shell Oil Company, a California corporation, and subsequent to April 1, 1939 but not later than July 26, 1939, Shell Oil Company, Incorporated, made diligent and continuous efforts to manufacture things in accordance with the disclosure of plaintiffs' applications for United States Letters Patent Serial Nos. 165,-765, 179,150 and 184,237, and expended in connection with such efforts a sum in excess of Ten Thousand (\$10,000.00) Dollars, but that such efforts were entirely unsuccessful and demonstrated that such things were [178] unmarketable and a failure; and admit that on or about July 26, 1939 defendant Shell Oil Company, Incorporated, over the signature of L. G. McLaren, a Vice President, at San Francisco, California, notified Allan B. Ruddle and J. Lydell Peck and each of them, of its election to cancel and terminate said license of April 8, 1938 forthwith, and stated that it did, by said letter of July 26, 1939 notify plaintiffs and each of them that said license of April 8, 1938 was "cancelled and termi-

nated'', and in this connection defendants and each of them allege that this letter was sent because the things or any of them covered by applications for United States Letters Patent Serial Nos. 165,765, 179,150 or 184,237 were and are entirely unsuccessful, a practical failure, unmarketable and utterly unsuitable, and were and are of no use or no value to Shell Oil Company or defendants or either of them, or to anyone, or otherwise or at all, but defendants and each of them specifically deny each and all of the remaining allegations in said paragraph contained.

IX

Answering paragraph IX of said complaint, defendants and each of them admit that Lydell Peck and A. B. Ruddle addressed a letter to Shell Oil Company reading substantially like "Exhibit E" but not dated, but defendants and each of them specifically deny each and all of the assertions in said letter contained and each and all of the remaining allegations in said paragraph contained.

X

Answering paragraph X of said complaint, defendants and each of them admit that Shell Oil Company, Incorporated on or about August 18, 1939, wrote a letter to Allan B. Ruddle and J. Lydell Peck and each of them, with which it enclosed a group of reports identified by the numbers and dates indi- [179] cated in such letter, but defendants and each of them specifically deny each and

all of the remaining allegations in said paragraph contained.

XI

Answering paragraph XI of said complaint, defendants and each of them admit that defendant Shell Oil Company, Incorporated, received a letter from Lydell Peck and Allan B. Ruddie dated September 6, 1939, reading substantially like "Exhibit G" attached to said complaint, but defendants and each of them specifically deny each and all of the assertions in said letter contained and each and all of the remaining allegations in said paragraph contained, and in this connection defendants and each of them allege that the license of April 8, 1938 hereinbefore referred to related only to plaintiffs' applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237, and that the true intent of all of the parties to such license at the time such license was signed and at all other times, was that such license related solely to the specific thing or things covered by such applications for United States Letters Patent.

XII

Answering paragraph XII of said complaint, defendants and each of them admit that defendant, Shell Oil Company, Incorporated, wrote to Allan B. Ruddie and J. Lydell Peck, and each of them on or about September 14, 1939, such letter reading substantially like "Exhibit H" attached to said complaint, and that Shell Oil Company, Incorpo-

rated, received from Allan B. Ruddie and J. Lydell Peck a letter dated September 20, 1939, such letter reading substantially like "Exhibit I" attached to said complaint, but defendants and each of them specifically deny each and all of the assertions in said letter "Exhibit I" contained and each and all of the [180] remaining allegations in said paragraph contained.

XIII

Answering paragraph XIII of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XIV

Answering paragraph XIV of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each of them allege that no alleged confidential disclosure or disclosures of any thing or things was or were at any time or at any place made by or for plaintiffs or either of them to or received from plaintiffs or either of them or acquiesced in by Shell Oil Company, or defendants or any of them, or otherwise or at all.

XV

Answering paragraph XV of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XVI

Answering paragraph XVI of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XVII

Answering paragraph XVII of said complaint, defendants and each of them, specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each of them allege that no alleged confidential disclosure or disclosures of any thing or things was or were at any time or at any place made by or for plaintiffs or either of them to or received from plaintiffs or either of them or acquiesced in by Shell Oil Company, or defendants or any of [181] them, or otherwise or at all.

XVIII

Answering paragraph XVIII of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each of them allege that the things, or any of them allegedly covered by the applications for United States Letters Patent Nos. 165,765, 179,150 and 184,237, which applications were the only basis for said license of April 8, 1938, were and are entirely unsuccessful, unmarketable, and utterly unsuitable, and of no use or value to anyone.

XIX

Answering paragraph XIX of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XX

Answering paragraph XX of said complaint, defendants and each of them, specifically deny each and all of the allegations in said paragraph contained.

XXI

Answering paragraph XXI of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each of them allege that they have not, nor has either of them, ever sold any thing or things covered by said applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237, for the reason that such thing or things proved completely unsuccessful and commercially impracticable as heretofore in paragraph VIII hereof alleged and that any attempted sale of such thing or things by defendants or either of them would greatly injure the reputation of defendants, and would be a futile act. [182]

XXII.

Answering paragraph XXII of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained, and in this connection defendants and each

of them allege that the true intent of all the parties to the license of April 8, 1938 at the time such license was signed and at all other times was that such license related solely to plaintiffs' applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237 and the specific things or any of them covered thereby, all of which subsequently proved to be unsuccessful and a failure, and of no use or value to anyone.

XXIII.

Answering paragraph XXIII of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XXIV.

Answering paragraph XXIV of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XXV.

Answering paragraph XXV of said complaint, defendants and each of them specifically deny each and all of the allegations in said paragraph contained.

XXVI.

For a further, separate, and affirmative defense to said complaint, defendants and each of them allege that said complaint, fails to state facts sufficient to constitute a claim upon which relief can be granted.

XXVII.

For a further, separate and affirmative defense to said complaint, defendants and each of them allege that the [183] thing or things covered by applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237 under which Shell Oil Company was licensed by the license agreement "Exhibit B" attached to said complaint constituted the sole thing or things licensed by plaintiffs or either of them, and the sole thing or things with respect to which there was or could be any obligation of performance by Shell Oil Company or defendants or any of them under such license, and that the true intent of all the parties to such license was that any such obligation of performance by Shell Oil Company or defendants or any of them related solely to the thing or things covered by said applications for United States Letters Patent.

XXVIII.

For a further, separate and affirmative defense to said complaint, defendants and each of them allege that the thing or things which constituted the sole basis and consideration for said license as alleged in paragraph XXVII hereof, did not work, although as alleged in paragraph VIII hereof Shell Oil Company and Shell Oil Company, Incorporated, made diligent and continuous efforts to manufacture such thing or things and expended in connection with such efforts a sum in excess of Ten Thousand (\$10,000.00) Dollars, but on the

contrary proved to be a practical failure, unmarketable and utterly unsuitable, and were and are of no use and no value to Shell Oil Company or to defendants or any of them or to any one, or otherwise or at all, and for this reason there was a total failure of consideration for said license.

XXIX.

For a further, separate and affirmative defense to said complaint, defendants and each of them allege that there could have been no confidential disclosure to Shell Oil Company [184] or to defendants or any of them of any thing or things alleged in said complaint to have been developed, discovered or invented by plaintiffs or either of them and alleged to have been disclosed to Shell Oil Company or defendants or any of them and such thing or things could not have been secrets because the thing or things covered by plaintiffs' applications for United States Letters Patent Serial Nos. 165,765, 179,150 and 184,237, or any of them under which Shell Oil Company was licensed by the license agreement Exhibit "B" attached to said complaint or which were otherwise allegedly disclosed by plaintiffs or either of them to Shell Oil Company, or defendants or any of them, were and each of them was known to the public long prior to any alleged disclosure by plaintiffs or either of them to Shell Oil Company, or defendants or any of them, unpatentable, did not teach anything which had not already been taught by the prior art, and

could not be the subject of exclusive appropriation by anyone.

XXX.

For a further, separate and affirmative defense to said complaint, defendants and each of them allege that by said license agreement Exhibit "B" attached to said complaint plaintiffs and each of them represented that they had a thing or things of value and usefulness to license Shell Oil Company, and that such thing or things covered by said applications, Serial Nos. 165,765, 179,150 and 184,237 or otherwise, were patentable, novel and involved invention, whereas such thing or things covered by said applications, or otherwise, were not patentable, not new, and did not involve invention, and nothing was disclosed to Shell Oil Company or defendants or either of them but things which were old in the art, which belonged to the public and which could not be the subject of exclusive appropriation by anyone, and in this connection defendants and each of them [185] allege that no claim or claims have been allowed in said applications except specific, narrow claims devoted to subject matter which is not patentable or new, and which is not of value or usefulness to anyone.

Wherefore, defendants and each of them pray that plaintiffs or either of them take nothing by this suit; that the complaint herein be dismissed; that the defendants have and recover their costs of suit herein incurred, and that defendants and

each of them have such other and further relief as to this court seems proper and fit.

SHELL OIL COMPANY,
INCORPORATED

By CHAS. M. FRYER

Its Attorney

SHELL DEVELOPMENT COM-
PANY

By CHAS. M. FRYER

Its Attorney

CHAS. M. FRYER

ALFRED C. AURICH

Attorneys for Defendants.

(Receipt of Service.)

[Endorsed]: Filed Feb. 21, 1940 [186]

[Title of District Court and Cause.]

Civil Action No. 21390-R

SUBSTITUTION OF ATTORNEYS

We the undersigned, plaintiffs above named, hereby substitute Hackley & Hursh, Roy C. Hackley, Jr. and Jack E. Hursh, as our attorneys in the place and stead of Townsend & Hackley, Chas. E. Townsend and Roy C. Hackley, Jr.

Signed at San Francisco, California, this 15th day of April, 1941.

(s) LYDELL PECK

(s) ALLAN B. RUDDLE

So Ordered:

MICHAEL J. ROCHE

United States District Judge

Receipt of a copy of the above Substitution of Attorneys is hereby acknowledged this 15th day of April, 1941.

(s) CHAS. M. FRYER

Attorney for Defendants.

[Endorsed]: Filed Apr. 16, 1941 [187]

[Title of District Court and Cause.]

REQUEST FOR ADMISSIONS UNDER
RULE 36

Defendants herein hereby request Plaintiffs to make the following admissions for the purpose of this action only, and subject to all pertinent objections to admissibility which may be imposed at the trial:

That on or about March 9, 1940, the plaintiffs herein received from defendant Shell Oil Company Incorporated, a letter, a true and correct copy of which is attached hereto.

Plaintiffs are respectfully requested to answer this request for admissions under Rule 36 within ten (10) days from [188] the date hereof.

Dated: November 19, 1941.

(S) CHAS. M. FRYER

(S) ALFRED E. AURICH

Attorneys for Defendants

Receipt of a copy of the above Request For Admissions Under Rule 36 is hereby admitted this 19th day of November, 1941.

HACKLEY & HURSH
ROY C. HACKLEY, JR.
JACK E. HURSH

Attorneys for Plaintiffs.

[189]

Shell Oil Company
Incorporated
Shell Building
San Francisco

March 8, 1940

Registered Mail

Returned Receipt Requested

Mr. Allen B. Ruddie

Mr. J. Lydell Peck

Crocker Building

San Francisco, California

Gentlemen:

We recently have reviewed the facts concerning our efforts to manufacture and market core oils and other products for related foundry use as disclosed and claimed in the pending applications of Peck and Ruddie, subject to the agreement between yourselves and Shell Oil Company, dated April 8, 1938. The completely discouraging results of this review have confirmed and enhanced our determination to completely abandon all efforts to

manufacture or sell or exploit any kind or type of core oils or other products for related foundry uses.

The time, effort and money heretofore expended by us in attempting to successfully manufacture the products contemplated by the pending applications above mentioned has resulted only in failure and in the development of facts which demonstrate and convince us that the subject matter of the applications is such that it is not susceptible of successful exploitation.

Under these circumstances, termination of the above mentioned agreement is the only course possible. Apparently, however, as indicated by the action recently instituted by your attorneys against us, you question the sufficiency of our previous efforts to terminate the agreement and in spite of the commercial insufficiency of its subject matter, pointed out above, seek some way of continuing it in force.

We therefore not only reiterate the notice of *recision* of agreement given you in our letter of July 26, [190] 1939, but also, pursuant to the terms of paragraph 15 of the agreement, elect to terminate it as of the date provided for in that paragraph. This letter, accordingly, is sent to you to serve as the thirty days written notice of such termination required by the provisions of that paragraph. As you are no doubt aware, such termination of the agreement pursuant to its own terms, may very

possibly precede final determination of the litigation by which you seek to keep it alive.

Very truly yours,

L. G. McLAREN (Signed)

SHELL OIL COMPANY, INCORPORATED

[Endorsed]: Filed Nov. 21, 1941. [191]

[Title of District Court and Cause.]

No. 21390-R.

ORDER

This matter having been submitted for decision, it is Ordered that judgment be entered in favor of defendants and that the action be dismissed as to both defendants, upon preparation of findings of fact and conclusions of law, with costs to be met by plaintiffs.

Dated: February 27, 1942.

MICHAEL J. ROCHE

United States District Judge

[Endorsed]: Filed Feb. 27, 1942. [192]

District Court of the United States
Northern District of California
Southern Division

At a Stated Term of the Southern Division of the United States District Court for the Northern District of California, held at the Court Room thereof, in the City and County of San Francisco, on Friday, the 27th day of February, in the year of our Lord one thousand nine hundred and forty-two.

Present: the Honorable Michael J. Roche, D. J.

No. 21390-R. Civil

LYDELL PECK, et al

vs.

SHELL OIL COMPANY, INC., et al

This cause having been heretofore tried and submitted to the Court for consideration and decision, being now fully considered, and the Court having filed its written order thereon, it is Ordered that judgment be entered herein in favor of defendants, and that the action be dismissed as to both defendants upon findings of fact and conclusions of law to be prepared by the attorneys for the defendant pursuant to the Rules of this Court, and that the defendants have judgment for their costs herein expended. [193]

[Title of District Court and Cause.]

FINDINGS OF FACT AND
CONCLUSIONS OF LAW

The above entitled cause came on regularly to be heard in the above entitled Court on December 2, 1941, and the hearing of said cause was concluded on December 10, 1941, the parties having been represented by counsel. Evidence having been offered by and on behalf of the parties, and the cause having been argued and submitted to the court, and the court, being now fully advised on the premises, upon [194] consideration of the evidence so offered, makes the following findings of fact:

1. Plaintiff Lydell Peck is a resident of the City of Oakland, County of Alameda, State of California, and plaintiff Allan B. Ruddie is a resident of the City and County of San Francisco, State of California.

2. Defendant Shell Oil Company, Incorporated, is a corporation organized and existing under the laws of the Commonwealth of Virginia and having a place of business in the City and County of San Francisco, State of California, and by an agreement of merger dated April 1, 1939 acquired all of the assets and liabilities of Shell Oil Company, a California corporation.

3. Defendant Shell Development Company is a corporation organized and existing under the laws of the State of California and having a place of business in the City and County of San Francisco, State of California.

4. On or about April 8, 1938, Shell Oil Company, the predecessor of Shell Oil Company, Incorporated, entered into a license agreement with Lydell Peck and Allan B. Ruddle under United States patent applications Serial Nos. 165,765, 179,150 and 184,237 relating to a sodium silicate core oil.

5. Shell Oil Company and its successor, Shell Oil Company, Incorporated, diligently attempted to perform all of the terms and conditions of such license agreement.

6. The sodium silicate core oil licensed to Shell Oil Company proved to be a practical failure, unmarketable and of no use or value to any one.

7. There is no evidence whereby any damage or [195] injury, legal or otherwise, can or will result or has resulted to plaintiffs or either of them by virtue of the cancellation by Shell Oil Company, Incorporated of the license agreement of April 8, 1938.

8. At no time was there any confidential disclosure by Lydell Peck or Allan B. Ruddle to Shell Oil Company, the predecessor of Shell Oil Company, Incorporated, or to Shell Development Company, or to any of the employees of such corporations of the idea of employing asphalt emulsion or any petroleum product in or as a core oil.

9. The evidence fails to establish any grounds for the granting of the relief prayed for by plaintiffs.

CONCLUSIONS OF LAW

1. The license agreement between plaintiffs and Shell Oil Company, predecessor of defendant Shell Oil Company, Incorporated, and all of the provisions thereof, are unenforceable because of failure of consideration.

2. The license agreement between plaintiffs and Shell Oil Company, predecessor of defendant Shell Oil Company, Incorporated, is impossible of performance.

3. Shell Oil Company, Incorporated, the successor of Shell Oil Company, was justified in cancelling the license agreement of April 8, 1938.

4. At no time did any confidential relationship exist between plaintiffs and either Shell Oil Company, the predecessor of Shell Oil Company, Incorporated, or Shell Development Company with respect to the use of asphalt emulsion or any petroleum product in a core oil, and [195A] defendants have violated no confidential relationship.

5. The complaint fails to state facts sufficient to constitute a claim upon which relief can be granted against either of defendants.

6. A judgment should be entered dismissing the complaint with costs to defendants.

MICHAEL J. ROCHE,

United States District Judge.

Dated: March 30th, 1942.

[Endorsed]: Filed Mar. 30, 1942. [195B]

In the Southern Division of the United States District Court for the Northern District of California.

Civil Action
File No. 21390-R

LYDELL PECK and ALLEN B. RUDDLE,
Plaintiffs,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,
Defendants.

JUDGMENT

This cause having come on regularly to be heard upon the pleadings and proof, documentary and oral, taken and submitted in this cause and being of record herein, plaintiffs being represented by their counsel, Roy C. Hackley, Jr., Esq., and Jack E. Hursh, Esq., and defendants being represented by their counsel, Charles M. Fryer, Esq., Alfred C. Aurich, Esq., and Harold I. Johnson, Esq., and the cause having been submitted to the court for its consideration and decision, and findings of fact and conclusions of law having been made and filed herein, now, therefore, pursuant to such findings of fact and conclusions of law, it is hereby ordered, adjudged and decreed that the complaint herein be and the same is hereby dismissed and that the defendants [196] herein shall have and recover of

and from plaintiffs their costs, charges and disbursements, in this Court to be taxed in the sum of \$753.90 and have execution therefor.

(S) MICHAEL J. ROCHE,

United States District Judge.

Dated: March 30th, 1942.

Approved as to form pursuant to Rule 22.

(S) ROY C. HACKLEY, JR.,

(S) JACK E. HURSH,

Attorneys for Plaintiffs.

[Endorsed]: Filed Mar. 30, 1942. [197]

[Title of District Court and Cause.]

MEMORANDUM OF COSTS AND
DISBURSEMENTS

Clerk's Fees (To be inserted by Clerk).....	\$ 10.00
Attorneys' Docket Fee at Final Hearing.....	20.00
Reporter's Fee on Final Hearing.....	255.00
Reporter's Fee on deposition of Allan B.	

Ruddle and Lydell Peck	175.40
Notary Fees on taking of depositions.....	90.70
Attorneys' Docket Fee for attendance at depositions taken and admitted in evidence	5.00

[198]

Witness Fees, subsistence and mileage:

John F. McSwain (Berkeley)

4 days @ \$2.00 per day.....	\$ 8.00
------------------------------	---------

Mileage, 40 miles @ 10c per mile.....	4.00
---------------------------------------	------

Harry W. Dietert (Detroit, Michigan)		
11 days @ \$5.00 per day.....		55.00
Mileage, 219 miles @ 10c per mile.....		21.90
Grant Warren (Martinez)		
1 day @ \$2.00 per day.....		2.00
Mileage, 35 miles @ 10c per mile.....		3.50
Ernest W. Zublin		
1 day @ \$2.00 per day.....		2.00
W. H. Spiri (San Anselmo)		
1 day @ \$2.00 per day.....		2.00
Mileage, 17 miles @ 10c per mile.....		1.70
William L. Everson (Oakland)		
1 day @ \$2.00 per day.....		2.00
Mileage, 6 miles @ 10c per mile.....		.60
Earl H. Spotswood (El Cerrito)		
3 days @ \$2.00 per day.....		6.00
Mileage, 48 miles @ 10c per mile.....		4.80
Arthur C. Waller (Seattle, Washington)		
8 days @ \$5.00 per day.....		40.00
Mileage, 403 miles @ 10c per mile.....		40.30
Robert B. Harbottle (Berkeley)		
1 day @ \$2.00 per day.....		2.00
Mileage, 10 miles @ 10c per mile.....		1.00
Affidavit on Motion for Continuance.....		.50
Verification to this cost bill.....		.50
Total		\$753.90

Taxed and allowed at \$753.90 over the objections of the attorney for plaintiff to certain items.

Apr. 3, 1942.

WM. J. CROSBY.

State of California,
City and County of San Francisco—ss.

Alfred C. Aurich, being duly sworn, deposes and says:

I am one of the attorneys for the defendants in the above entitled cause, and as such have knowledge of the facts relative to the above costs and disbursements; the items in the above Memorandum contained are true and correct; the said [199] disbursements have been necessarily incurred in the said cause, and the services charged therein have been actually and necessarily performed as therein stated.

(S) ALFRED C. AURICH.

Subscribed and sworn to before me this 1st day of April, 1942.

(Seal) (S) ALFRED D. MARTIN,
Notary Public in and for the City and County of
San Francisco, State of California. [200]
To Lydell Peck and Allan B. Ruddell and to Hack-
ley and Hursh, their attorneys:

You and Each of You, Will Please Take Notice that on Friday, the 3rd day of April, A.D., 1942, at the hour of 9:30 o'clock A.M., defendants above named will apply to the Clerk of the above entitled Court to have the foregoing Memorandum of Costs and Disbursements taxed pursuant to the rule of said Court in such case made and provided.

(S) CHAS. M. FRYER,

(S) ALFRED C. AURICH,

(S) HAROLD I. JOHNSON,

Counsel for Defendants.

Receipt of a copy of the foregoing Memorandum of Costs And Disbursements is hereby acknowledged this day of April, 1942.

HACKLEY & HURSH,
ROY C. HACKLEY, JR.,
JACK E. HURSH,
Attorneys for Plaintiffs.

[Endorsed]: Filed Apr. 1, 1942. [201]

[Title of District Court and Cause.]

CERTIFICATE UNDER 28 U.S.C., SECTION
600-C

As a part of the order of this Court, dated April 13, 1942, denying plaintiffs' Motion to Retax Costs, it is hereby certified, under the provisions of 28 U.S.C., Section 600-C, that defendants' witnesses Dietert and Waller resided so far from this Court as to prohibit their daily return to their respective residences.

MICHAEL J. ROCHE,
United States District Judge.

Dated: April 14, 1942.

[Endorsed]: Filed Apr. 14, 1942. [202]

[Title of District Court and Cause.]

NOTICE OF APPEAL

Notice Is Hereby Given that Lydell Peck and Allan B. Ruddle, plaintiffs in the above entitled action, hereby appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the Judgment entered in this action on March 30, 1942.

Dated this 12th day of June, 1942.

HACKLEY & HURSH,
ROY C. HACKLEY, JR.,
JACK E. HURSH,

Attorneys for Plaintiffs-Appellants, 807 Crocker Building, San Francisco, California.

[Endorsed]: Filed June 12, 1942. [203]

[Title of District Court and Cause.]

BOND ON APPEAL

Know All Men by These Presents:

That Central Surety and Insurance Corporation, a corporation created, organized and existing under and by virtue of the laws of the State of Missouri and authorized to do business in the State of California, is held and firmly bound unto Shell Oil Company, Incorporated, a corporation organized and existing under the laws of the Commonwealth of

Virginia, and Shell Development Company, a corporation organized and existing under the laws of the State of Delaware, defendants in the above entitled cause, in the penal sum of Two Hundred Fifty Dollars (\$250.00), to be paid to the said Shell Oil Company, Incorporated, and Shell Development Company, their heirs, executors and assigns, for which payment well and truly to be made the Central Surety and Insurance Corporation binds itself, its successors and assigns firmly by these presents.

Scaled with the corporate seal and dated this 12th day of June, 1942. [204]

The condition of the above obligation is such that:

Whereas, Lydell Peck and Allan B. Ruddle, plaintiffs in the above entitled cause, are about to take an appeal to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the judgment in the aforesaid suit made and entered on the 30th day of March, 1942;

Now, Therefore, the condition of the above bond is such that if said Plaintiffs, Lydell Peck and Allan B. Ruddle, shall prosecute their appeal to effect, or if they fail to make good said appeal, shall answer all costs adjudged against them by reason thereof, then this obligation shall be void; otherwise to remain in full force and effect.

This recognizance shall be deemed and construed to contain the "Express Agreement" for summary

judgment, and execution thereon, mentioned in Rule 34 of the District Court.

In Witness Whereof the corporate name of said Surety is hereunto affixed by its duly authorized Attorney-in-Fact and Agent at San Francisco, California, this 12th day of June, 1942.

CENTRAL SURETY AND INSURANCE CORPORATION,

[Seal] By A. DOUGLAS MENNIE,
Attorney-in-Fact.

Premium \$10.00 per annum.

State of California,
City and County of San Francisco—ss.

On this 12th day of June in the year one thousand nine hundred and forty-two before me, Emily K. McCorry, a Notary Public in and for the City and County of San Francisco, personally appeared A. Douglas Mennie, known to me to be the person whose name is subscribed to the within instrument as the Attorney-in-Fact of the Central Surety and Insurance Corporation, and acknowledged to me that he subscribed the name of the Central Surety and Insurance Corporation thereto as surety, and own name as Attorney-in-fact.

[Seal] EMILY K. MCCORRY,
Notary Public in and for the City and County of San Francisco, State of California.

My Commission Expires December 30, 1942.

[Endorsed]: Filed June 12, 1942. [205]

[Title of District Court and Cause.]

SATISFACTION OF COSTS

Judgment in the above entitled cause having been entered herein on March 30, 1942 awarding, among other things, costs in favor of defendants and against plaintiffs in the sum of \$753.90 and said sum having been paid by the plaintiffs to defendants, payments for full satisfaction of said costs is hereby acknowledged.

SHELL OIL COMPANY, INC.
SHELL DEVELOPMENT CO.,
By CHAS. M. FRYER,
ALFRED C. AURICH,
HAROLD I. JOHNSON,
Their Attorneys.

[Endorsed]: Filed Sept. 8, 1942. [206]

[Title of District Court and Cause.]

ORDER ENLARGING TIME

Good cause appearing therefor, it is hereby ordered that the time within which plaintiff-appellant may docket this cause and file the record thereof with the Clerk of the United States Circuit Court of Appeals of the Ninth Circuit be and is hereby enlarged to and including the 19th day of August, 1942.

MICHAEL J. ROCHE,
United States District Judge.

Dated: July 20, 1942.

[Endorsed]: Filed Jul. 21, 1942. [207]

[Title of District Court and Cause.]

ORDER ENLARGING TIME

Good cause appearing therefor, It Is Hereby Ordered that the time within which plaintiffs-appellants may docket this cause and file the record thereof with the Clerk of the United States Circuit Court of Appeals of the Ninth Circuit be and is hereby enlarged to and including September 9, 1942.

MICHAEL J. ROCHE,

United States District Judge.

Dated: August 17, 1942.

[Endorsed]: Filed Aug. 17, 1942. [208]

[Title of District Court and Cause.]

ORDER ENLARGING TIME

Good cause appearing therefor, It Is Hereby Ordered that the time within which plaintiffs-appellants may docket this cause and file the record thereof with the Clerk of the United States Circuit Court of Appeals of the Ninth Circuit be and is hereby enlarged to and including October 9, 1942.

(S) CURTIS D. WILBUR,

Circuit Judge.

Dated: September 8, 1942.

[Endorsed]: Filed Sept. 8, 1942. [209]

[Title of District Court and Cause.]

ORDER

Good cause appearing therefor, It Is Hereby Ordered that all original depositions taken in these proceedings be transmitted to the Clerk of the Circuit Court of Appeals for the Ninth Circuit.

MICHAEL J. ROCHE

United States District Judge

Dated: October 9, 1942.

[Endorsed]: Filed Oct. 9, 1942. [209-A]

[Title of District Court and Cause.]

APPELLANTS' DESIGNATION OF CONTENTS OF RECORD ON APPEAL

Come now appellants-plaintiffs here, and designate the portions of the record, proceedings, and evidence to be contained and set forth in the record on appeal as follows:

1. Complaint.
2. Answer to Complaint.
3. Substitution of attorneys for plaintiffs.
4. Memorandum Decision and Minute Order of the Trial Court.
5. Findings of Fact and Conclusions of Law.
6. Judgment.
7. Notice of Appeal to the Ninth Circuit Court of Appeals. [210]

8. Costs Bill as taxed of defendants.
9. Satisfaction of Costs.
10. Costs Bond on Appeal.
11. Orders of enlargement of time to docket cause in the Circuit Court of Appeals.
12. Reporter's transcript of testimony and proceedings and trial of the cause, volumes 1 to 6 inclusive.
13. All original exhibits admitted in evidence during the trial of this cause.
14. All original exhibits offered in evidence and marked for identification of this cause.
15. All original depositions adduced in and on file in the records of this cause.
16. Stipulation and Order re transmission of exhibits and record to Circuit Court of Appeals.
17. Appellants' designation of contents of record on appeal.

Dated at San Francisco, California, this 30 day of September, 1942.

HACKLEY & HURSH
ROY C. HACKLEY, JR.
JACK E. HURSH

Attorneys for Appellants.

(Receipt of Service.)

[Endorsed]: Filed Sept. 30, 1942. [211]

[Title of District Court and Cause.]

APPELLEES' DESIGNATION OF CONTENTS
OF RECORD ON APPEAL

Now come appellees-defendants herein, and designate the following portions of the record, proceedings, and evidence to be contained and set forth in the record on appeal herein, in addition to those portions of the record, proceedings, and evidence set forth in appellants' designation of contents of record on appeal as follows:

1. Request for Admissions Under Rule 36, filed [212] November 21, 1941.
2. Certificate Under 28 U.S.C., Section 600-C, filed April 14, 1942.
3. Docket entries herein.
4. Appellees' Designation of Contents of Record on Appeal.

(S) CHAS. M. FRYER

(S) ALFRED C. AURICH

(S) HAROLD I. JOHNSON

Attorneys for Appellees-
Defendants

Receipt of a copy of the foregoing designation is acknowledged this 2 day of October, 1942.

(S) HACKLEY & HURSH

(S) ROY C. HACKLEY, JR.

(S) JACK E. HURSH

Attorneys for Appellants

[Endorsed]: Filed Oct. 2, 1942. [213]

[Title of District Court and Cause.]

STIPULATION AND ORDER RE TRANSMIS-
SION OF EXHIBITS AND RECORD TO
APPELLANT COURT

Parties agreeing that good cause appearing there-
for, subject to the approval of this Honorable
Court, It Is Hereby Stipulated that all original
exhibits admitted and offered in evidence during
the trial of this cause, and the original transcript
of record in this cause be transmitted to the Clerk
of the Circuit Court of Appeals for the Ninth
Circuit.

Dated: September 29, 1942.

HACKLEY & HURSH
ROY C. HACKLEY, JR.
JACK E. HURSH

Attorneys for Appellants
CHAS. M. FRYER
ALFRED C. AURICH

Attorneys for Appellees [214]

The foregoing stipulation is approved and It Is
Therefore Hereby Ordered that the Clerk of this
Court transmit all original exhibits admitted or
offered in evidence during the trial of this cause
and the original transcript of record in this cause
to the Clerk of the Circuit Court of Appeals of the
Ninth Circuit.

Dated: September 30th, 1942.

A. F. ST. SURE

United States District Judge.

Filed Sept. 30, 1942. [215]

[Title of District Court and Cause.]

DOCKET ENTRIES

Date		Filings—Proceedings
1939		
Oct. 25	1.	Filed complaint, issued summons.
	31	2. Filed summons ex Oct 26.
Nov. 15	3.	Filed stip ex time-plead.
	4.	Filed stip ex time-plead.
Dec. 14	5.	Filed stip ex time-plead.
	29	6. Filed stip ex time-plead.
1940		
Jan. 15	7.	Filed motion for bill of particulars.
	8.	Filed notice of hearing deft's bill of particulars.
	9.	Filed order ex time to answer.
	29	Ord motions for bill of particulars denied, deft to have 20 days to answer.
Feb. 19	10.	Filed stip ex time-answer.
	21	11. Filed answer of defts.
Nov. 25		Ord case dropped from J. C. Calendar.
1941		
Apr. 16	12.	Filed substitution of attys.
	21	Ord dropped from Jud. Conf. Calendar.
Aug. 8	13.	Filed mo & no of mo to set.
	11	Ord set for trial Dec 2. Mailed notice.
Sept. 23	14.	Filed no of mo for con of trial.
Nov. 3		Ord deft's mo for continuance denied.
	17	Ord set for trial Dec 2.
	21	15. Filed defts request for admissions under Rule 36.

1941

- Nov. 28 Rec'd & filed deposition of Allan B. Ruddle.
 Rec'd & filed deposition of Lydell Peck.
- Dec. 1 Rec'd & filed deposition of Arthur C. Waller.
 Opened & refiled deposition of Allan B. Ruddle.
16. Filed notice of filing depositions.
- 2 Rec'd & filed deposition of J. F. McSwain.
 Rec'd & filed deposition of E. W. Zublin.
17. Exhibit No. 1 (McSwain).
 Rec'd & filed deposition of K. A. Wright.
18. Exhibits Nos 1 to 19 (Wright).
 Ord trial before the Court, mo of deft to dismiss as to Shell Development submitted [216]
- Dec. 2 Evid intro, con to Dec 3.
- 3 18. Filed pltff's exhibit 5.
 19. Filed pltff's exhibit 6.
 20. Filed pltff's exhibit 7.
 21. Filed notice of filing depositions.
 Ord trial resumed, evid intro, con to Dec 4.
- 4 Opened & filed deposition of Arthur C. Waller.
22. Filed praecipe, issued subpoena duces tecum.

Date

1941

Ord trial resumed, evid intro, deft's
mo to dismiss as to defts' & deft
Shell Development Co submitted,
con to Dec 5.

Dec. 5 Ord trial resumed, evid intro, mos'
of defts to dismiss denied, con to
Dec 9.

9 Ord trial resumed, evid intro, con to
Dec 10.

10 Ord trial resumed, evid intro, briefs
to be filed 20-10-5 days, con Jan
15, 1942, for further trial.

Opened & filed deposition of Lydell
Peck.

12 23. Filed stip withdrawing certain ex-
hibits.

24. Filed stip withdrawing certain ex-
hibits.

30 25. Filed pltff's opening brief.

1942

Jan. 9 26. Filed deft's brief.

15 27. Filed pltff's reply brief.

Ord case submitted, defts granted 5
days to file brief in reply to pltff's
reply brief.

Filed 6 Vols of Reporter's Tran-
script.

20 28. Filed deft's reply brief.

1942

- Feb. 27 Ord judgt entered in favor of
 defts with costs upon findgs to be
 filed. Mailed notice.
29. Filed order.
- Mar. 3 30. Filed stip ex time of defts to lodge
 findgs.
- 11 Lodged findgs.
- 13 31. Filed stip & ord ex pltff's time to
 object to deft's findgs.
- 20 32. Filed stip & ord ex pltff's time to
 objct to deft's findgs.
- 27 33. Filed pltff's objects & amndts to pro-
 posed findgs.
 Lodged pltff's findgs.
34. Filed order re objects & amndts to
 findgs.
- 28 35. Filed affidavit of service.
- 30 36. Filed deft's findgs.
37. Filed judgt in favor of deft with
 costs, Mailed notice.
- Apr. 1 38. Filed memo of costs & disburse-
 ments.
- 4 39. Filed pltff's mo to retax costs.
- 6 Ord further hrg re mo to retax costs
 con Apr 13.
- 9 40. Filed deft's memo in opposition to
 mo to retax cost bill.
- 13 Ord pltff's mo to retax costs denied.
- 14 41. Filed certificate under 28 U.S.C.,
 Section 600-C.

Date

1942

- June 12 42. Filed notice of appeal, Mailed notice.
43. Filed bond on appeal.
- July 21 44. Filed ord ex time to docket appeal.
- Aug. 17 45. Filed order enlarging time.
46. Filed stipulation ex time for appeal.
- Sept. 8 47. Filed satisfaction of judgt.
48. Filed stip from CCA ex time to docket appeal.
49. Filed ord CCA ex time to docket appeal.
- Sept. 30 50. Filed designation of record on appeal.
51. Filed stip & ord re transmittal exhibits etc.
- Oct. 2 52. Filed appellees' designation. [217]
-

District Court of the United States
Northern District of California

CERTIFICATE OF CLERK TO TRANSCRIPT
OF RECORD ON APPEAL

I, Walter B. Maling, Clerk of the District Court of the United States, for the Northern District of California, do hereby certify that the foregoing 217 pages, numbered from 1 to 217, inclusive, together with 6 Volumes of the Reporter's Transcript & 7 depositions, contain a full, true, and

correct transcript of the records and proceedings in the case of Lydell Peck et al, Plaintiffs, vs. Shell Oil Company, Inc. et al, Defendants, No. 21390-R, as the same now remain on file and of record in my office.

I further certify that the cost of preparing and certifying the foregoing transcript of record on appeal is the sum of Twenty-five dollars and forty cents (\$25.40) and that the said amount has been paid to me by the Attorney for the appellant herein.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said District Court at San Francisco, California, this 9th day of October A. D. 1942.

[Seal]

WALTER B. MALING

Clerk

WM. J. CROSBY

Deputy Clerk [218]

In the Southern Division of the United States
District Court for the Northern District
of California.

No. 21390-R

LYDELL PECK and ALLAN B. RUDDLE,
Plaintiffs,

vs.

SHELL OIL COMPANY, INCORPORATED,
a corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,
Defendants.

REPORTER'S TRANSCRIPT

Tuesday, December 2, 1941
10 A.M.

Counsel Appearing:

For the plaintiffs:

Messrs. Hackley & Hursh, by Roy C. Hack-
ley, Jr., Esq., and Jack E. Hursh, Esq.

For the defendants:

Alfred C. Aurich, Esq., and Harold I.
Johnson, Esq.

The Clerk: Peck v. Shell Oil Company.

OPENING STATEMENT ON BEHALF OF PLAINTIFFS

Mr. Hackley: In this case, if your Honor please,
I would like to give to your Honor a general de-

scription of the issues established by the pleadings before going into the proofs, with the thought that it may be helpful to the Court in following the general theory of the case.

Broadly, the proofs will be directed, on the part of the plaintiffs, to the proposition that some years ago one of the plaintiffs, Allan B. Ruddle, developed a core-binding product, a core oil, which eventually was given the name in the trade [1*] of Core-Min-Oil. The product will be referred to during the trial as Core-Min-Oil.

That product comprised primarily an asphalt or asphalt emulsion base, and other agents of the class of sodium silicate, aluminum silicate, and sodium fluo-silicate.

Mr. Ruddle worked for some considerable time, a matter of years, in the development of the product, and eventually believed he had reached the point, as our evidence will show he believed, where he felt he had a product which had commercial possibilities. He discussed the commercial possibilities with a number of leading manufacturers of asphalts and asphalt emulsions, on the theory that this opened a new market for asphalt. I believe it was his feeling from those with whom he discussed, as the evidence will show, that asphalt as a core oil was theretofore not commercially used. He went to a number of companies, interested them in it, discussions were under way, and one day, as the testimony will show, he ran into a friend of his,

*Page numbering appearing at top of page of original Reporter's Transcript.

who was the head of the asphalt division of the defendant Shell Oil Company, now Shell Oil Company, Incorporated; then I believe it was called the Shell Oil Company, a California corporation. It since has through merger, as the evidence will show, become the Shell Oil Company, Incorporated, which comprises a number of widely known, worldwide known, Shell Oil Companies.

Mr. Ruddle, talking with this gentleman, I believe informally on Market Street, the proof will show, told him he had something he thought might be of interest to Shell. His friend, Mr. J. F. McSwain of that company, the Shell Oil Company, and head of the asphalt department, invited Mr. Ruddle to go into it further with the company and investigate the product. [2]

In the course of this investigation, during the early months, as the proofs will show, the early months of 1938, January, February and perhaps March, the Shell Company was given samples of the product, made elaborate tests, both in the laboratory and in a commercial foundry in Oakland and one, I believe in Berkeley. And eventually they apparently reached the conclusion that the product was meritorious, because in the latter part of March 1938 Shell presented to Messrs. Peck and Ruddle, who were the proprietors of the product, a proposed contract, comprising an exclusive license agreement under the Ruddle developments, directed not only to the development itself, but also to certain applications for patent which were then pend-

ing on the product, and which, by the way, have since issued into United States letters patent.

The contract was reviewed, and on April 8, 1938 an agreement was entered into whereby Shell acquired the exclusive right to market, sell, develop and exploit, both through itself, its parent companies and its subsidiaries and affiliates, as the contract expressed it, the product of Mr. Ruddie, and any other products for foundry use which were developed along the same line or competitively therewith.

In that connection I would like to call attention to a clause of the contract, and it will become significant as this trial goes forward, relating to the question of royalty. The contract, your Honor, is annexed to the complaint as Exhibit B, and the text of the contract was admitted in the answer to be correct, and it was admitted that the contract was duly entered into by the parties. In that paragraph relating to royalty this general provision is set forth:

“Shell Oil agrees that it and its affiliates, subsidiaries, [3] and parent companies in the United States will pay as royalty to Peck and Ruddie of all their sales of Core-Min-Oil and other compositions for foundry use sold for use in the United States percentages of the selling prices to consumer f.o.b. manufacturing plant, excluding sales tax and containers, according to the following sliding scale.”

Your Honor will note there the provision was for sales in the United States. There are later provi-

sions as to foreign patent protection, foreign coverage of the developments and royalties in foreign countries under these circumstances: Shell being the one to name the countries in which it desired protection.

In addition to that, Shell went a step further in the contract. They not only agreed to pay a royalty, but they agreed to use the utmost diligence in attempting to market and in marketing to the fullest extent of their facilities the product Core-Min-Oil and other compositions for foundry use.

The Court: What are the other compositions for foundry use?

Mr. Hackley: At the time I believe there was a composition mentioned as a core wash, and I believe there was also contemplated, I believe the evidence will show, if we go into that point——

The Court: A wash for cores?

Mr. Hackley: Yes.

The Court: An oil?

Mr. Hackley: I believe not. I believe it is a carbon compound that is washed over the core to give it a smooth or firm surface.

The Court: I will say for the benefit of both sides that I started as a coremaker, and so I think probably that will be [4] a warning to both sides getting reckless. I know just exactly, in a measure, how cores are made and what oils were used even in my days many years ago. So proceed with that, gentlemen. I have the benefit of the experience.

Mr Hackley: This core wash and its constituents

will be brought into the record but will not be a major part of the issue before your Honor.

The Court: The core wash on its outer surface in my day—it might have changed since—was not an oil.

Mr. Hackley: It was not an oil?

The Court: No, it was not an oil.

Mr. Hackley: That is my understanding now, but I am frank to say I do not know.

The Court: I do not know what has developed since then. They have made such progress in chemistry since then I would not venture to say what they are doing now.

Mr. Hackley: The product we are primarily concerned with in this case is an oil for a binder for the core itself, in contrast with the wash, that I understand is put over the surface of the core. This is a binder which would be a substitute for linseed oil, Houghton Oil, Quandt Oil, and the various oils that are widely known in the market, and I assume, with your Honor's experience, known to your Honor.

(At the conclusion of plaintiff's opening statement the following occurred):

The Shell Oil Company agreed after this initial investigation as follows, and I read from the contract paragraph II on page 2:

“Shell Oil shall diligently attempt to sell Core-Min-Oil and other compositions for foundry use as covered by such patent applications or later patents; and further, Shell Oil shall diligently attempt

to interest its affiliated, subsidiary [5] and parent companies in the United States to sell Core-Min-Oil and other compositions for foundry use as covered by such patent applications or later patents."

And I might say in that connection, our evidence will show, if it becomes important, that the words "other compositions for foundry use" are necessarily directed to substitutes for the precise formula which Peck and Ruddle developed and presented to the Shell Oil Company, that is, core oils in contrast with core washes, although the phrase is definitely and designedly broad enough to cover whatever Shell might make and sell for that purpose, that is, for foundry use.

The contract was entered into but did not become a formal or binding agreement as such under its terms until an option period of six months had first elapsed, and then would become a binding agreement, as I recall the terms of the instrument, only upon notice from Shell of its intention to elect to proceed under the contract. We would have to turn to the instrument for that, but the contract provided for its automatic continuance unless Shell asked for its discontinuance. In any event, after this six months option period and three ten-day extensions of the option period granted at the request of Shell by the plaintiffs, the contract was exercised by the Shell Oil Company and became a firm, formal binding agreement, and upon its terms had an initial five-year terms, which simply meant that Shell had bound itself unequivocally for five years to perform the terms of the contract.

The Court: What is the date of the contract?

Mr. Hackley: April 8, 1938. The date of the option, your Honor, was November 2, 1938. The date of the exercise of the option and the initial term under the contract was five [6] years. I will read the term of the contract, sections 14 and 15 of the contract. I will first read section 14:

“The term of this agreement shall extend until the expiration date of the last issued patent owned or controlled by Peck or Ruddle covering Core-Min-Oil.”

Section 15: “Shell Oil may terminate this license agreement in the United States at any time after five years from the date hereof by giving thirty days’ notice in writing to Peck and Ruddle.”

That meant that the contract had an initial term to and including at least April 8, 1943, or some two and a half years beyond the present date, and some three and a half years beyond the date, or four and a half years, I believe, beyond the date of filing this action. In any case, Shell, it will be noted, and as the proofs will show, had a period of seven months from April 8, 1938 to November 2, 1938 within which further to investigate the patent situation, as the contract expresses it, relating to Core-Min-Oil, the commercial possibilities of the sale of the product, the laboratory problems in connection with it, and particularly the foundry problems in connection with the use of the product. That meant, as the proofs will show, that Shell had an aggregate of ten months before this agreement be-

came binding within which they could at any time, without any penalty to themselves, remove themselves from the agreement by canceling it as a matter of right. After that term had expired and the contract had been exercised, as Shell did it, as the proofs will show, on November 2, 1938 the contract went into force four or five years, and Shell could not cancel that contract until the end of five years, and then only by giving thirty days' notice of its intention to cancel in advance of [7] that date.

I emphasize that, because I want your Honor to see even at this early stage that Shell had ten months, with their gigantic laboratory facilities, high-paid technicians, access to commercial foundries, all of which were utilized during that option and prior period for the investigation of the product, to determine whether or not they wanted to undertake the obligations which they have here of their own free will undertaken.

During all this period, as the reports will show, as the evidence will show, Shell had been investigating in the laboratory and in the foundry this product. The laboratory at Martinez, the laboratory at Emeryville, the Vulcan Foundry in Oakland, Macauley Foundry in Berkeley, were all utilized for this purpose. The contract was exercised, and apparently Shell entered into it and continued along the line in apparent good faith for a period of several months.

One day, as the evidence will show, in the middle of 1939, sometime either late in June or early in

July, the same man that Mr. Ruddle talked to in the first instance, Mr. McSwain, head of the asphalt division of the Shell Oil Company, met Mr. Ruddle at Mr. McSwain's office, and he told Mr. Ruddle that things did not look so good for Core-Min-Oil at that time. This was the first indication, as the evidence will show, that Shell had any thought that this product was anything but perfectly satisfactory for all purposes. As a matter of fact, their reports, copies of which will be offered to your Honor, their laboratory notes, all showed the product to be entirely adequate for every purpose for which it was designed and to be superior in major respects to competitive products on the market. Such things as drying time of the cores, an important factor, cost [8] of materials, easy making of the core—things of that sort were all in favor of Core-Min-Oil.

I believe that the evidence will show, as a matter of fact, that Core-Min-Oil was in a position to be marketed at half the price of the next lowest competitive product in price on the market, and about a third or a quarter of the price of linseed oil, and marketed at a tremendous profit to the Shell Oil Company had they elected to perform this agreement.

In any event, Mr. McSwain told Mr. Ruddle, as the evidence will show, that Shell was thinking of giving up the contract. Mr. Ruddle protested. First of all, there was no power in the Shell Oil Company to surrender the contract. They had

entered into it and were bound to carry out its obligations. Second, that he, Mr. Ruddle, and his associate, Mr. Peck intended to hold Shell to the terms of the contract.

Mr. McSwain explained the matter, as the evidence will show, by saying that the Shell Oil Company in its investigations had discovered another core oil utilizing asphalt but not utilizing the balance of the formula which Mr. Ruddle had brought to the Shell Oil Company, which was equal to all of the good properties of Core-Min-Oil and superior to Core-Min-Oil in some respects, and that as far as the Shell Oil Company was concerned, it considered that product to be its own property, and it intended to exploit and market it independently of the contract; that they were willing to return to Peck and Ruddle the product that Peck and Ruddle had brought to them and go on with the product of their experiments and tests of the Ruddle product, and market the product of that experimentation. Now, the evidence will develop that fact.

Shortly after that, Mr. Peck and Mr. Ruddle received from [9] the Shell Oil Company what purported to be a notice of cancellation dated July 26, 1938, saying in so many words that it was the intention of the Shell Oil Company to cancel the contract, and I believe the notice said "For failure of consideration," and went on with certain allegations of fact of a nature which it will be up to the defendant to prove, if it be relevant to this issue, and Shell stated that they were no longer going to continue under this agreement.

Peck and Ruddell replied by pointing out that they considered Shell bound by the agreement, intended to stand on it themselves, and intended that Shell should carry out its obligation diligently to market Core-Min-Oil and other products for foundry use.

Now, it is at that point that I call your Honor's attention in this preliminary phase to the words "other products for foundry use." Obviously, that includes any developments which Shell may make of the same type. Obviously, when Shell developed this other core oil during the course of its study of the Ruddell product, they looked back at the contract and found that here, under this contract which they had signed with Messrs. Peck and Ruddell, they would have to pay to Peck and Ruddell a royalty on what they themselves had developed by the terms of that contract. Apparently they did not intend to do that. Apparently their attorneys advised them not only would they have to pay a royalty under it, but when they terminated the contract, they would have to surrender back to Peck and Ruddell the development that was so made, because in a reply to Shell, Peck and Ruddell stated that they were standing on the contract, and they understood that this cancellation was caused not by any failure of consideration, which would seem to be preposterous in the light of the ten months of investigation which Shell had had, and [10] the almost two years that Shell had the product exclusively at the time of the notice of cancellation.

but also because of the fact that they, Peck and Ruddle, understood that Shell had developed a new and what they considered to be a superior product, which they were attempting to avoid, and including under the terms of the contract in the manner the contract provided.

Shell promptly replied to that letter and said they were motivated in canceling the contract by the fact that the Peck and Ruddle product was of no value, commercially or otherwise, not by the fact that they had admittedly developed a different and another product. I think they said they developed it quite apart from their study of the Peck and Ruddle product. But as the evidence will show here, the same members of the Shell organization that were studying the Peck and Ruddle product were the ones who developed this so-called new or different Shell product.

Nevertheless, Peck and Ruddle again responded and said that they had entered into the contract in good faith, and insisted that Shell perform. They pointed out that Shell had never made any effort whatsoever to market any product under the agreement; that, and as the evidence will show, Shell admits that they never made any effort to sell so much as a single gallon of this product. Yet here is the contract in which they agreed to do just exactly that, and to do it for at least five years, and do it diligently.

Getting no satisfaction in attempts to dispose of the matter amicably, this action was filed, and the

burden of this action is that your Honor order the Shell Oil Company specifically to perform its contract, and that you award to the plaintiffs damages for defendants' failure, neglect and refusal to [11] perform the contract prior to the date of your Honor's order. It would appear that if Shell continues after your Honor makes the order that we are seeking here, continues to refuse to perform the contract, we will then be in a position to move for supplemental relief in equity. That, of course, will be something to be faced at a later date and only if Shell continues to flaunt the obligations of this contract.

The Shell Oil Company, as your Honor sees from the statement which we have given, and assuming we can support these statements with proof, is a gigantic organization with tremendous resources, with one of the finest, if not the finest, technical laboratories in the world over here in Emeryville, California, with fine technical laboratories at Martinez, with resources unlimited so far as direct field tests are concerned. The picture that we intend to show to your Honor in this case is simply that of two men, Mr. Peck and Mr. Ruddle, neither with any necessary experience in the making of cores, core oil, foundry work, particularly no experience in merchandising those products, putting their trust in that company, in good faith, the company sewing them up lock, stock and barrel so they couldn't have sold, and the contract *expressly* them from doing it during the period of the con-

tract, and after Shell has kept them off the market during that period, while Shell finds another way to accomplish the same result in the same or a better way, as Shell contends, then Shell said, "Here, you men can have back that which you have given us. We have kept you beautifully tied up during the period we got our product on the market. Now you are free to go ahead, and you can suffer the consequences. If you can sell your product in the face of our competition, that is fine, but you are not going to have the help of this [12] organization in spite of our contractual obligations."

That, your Honor, is the broad outline of the case. Before closing this brief opening statement, I would like to add one or two things as to the analysis of the pleadings so we can determine what issues we must prove and what issues remain admitted in the pleadings.

Taking the complaint, the jurisdiction of the plaintiff is denied. That will have to be proved. Shell, however, admits its own existence, admits its jurisdiction—and when I use the words here "Shell Oil Company," I am referring to the two defendants, one of them called the Shell Oil Company, Incorporated, I believe a Virginia corporation, and the other Shell Development Company, a corporation of some other State, I think it is Delaware, if I remember the pleadings. It is irrelevant, or it is immaterial, at least, because the facts stand admitted. And I refer to the two companies, the two defendants, who are so closely intermingled

as to be inseparable, as the "Shell" or the "Shell Oil Company" through this proceeding, unless it is deemed inadvisable by your Honor or otherwise during the course of the trial.

As far as the jurisdiction of the case is concerned, diversity of citizenship is admitted, jurisdiction is denied by the defendant, because they say the value to the plaintiffs of the issue of this case, exclusive of interest and costs, is not more than \$3,000. As a matter of fact, our prayer is for an accounting in the sum of more than \$100,000.

The legal status of the defendant corporations is admitted. There is an exhibit annexed to the complaint, which will be offered in evidence, which is likewise admitted as establishing or defining that status. [13]

Then the defendant proceeds to deny substantially all of the balance of the pleading, except admitting the execution of the agreement, Exhibit B; the exercise of the option, Exhibit C; the cancellation notice, or alleged notice of cancellation, whatever they choose to term it, Exhibit D—these exhibit numbers are to the complaint, your Honor—; the refusal of the plaintiffs to accede to the cancellation, Exhibit E; the reports furnished by the defendants, Exhibits F-1 to -13; the demand for performance; the further refusals, Exhibits G, H and I—excepting for that, the Shell Oil Company denies everything. They deny that Core-Min-Oil was developed; they deny that it ever existed; they deny that it was ever shown to them by the plaintiffs; they deny that they ever received a disclosure of it

from the plaintiffs; they deny that they ever worked with it; they deny the disclosure was in confidence, to be marketed only by the license and consent of the plaintiffs; they deny that they studied the product before making the contract. They admitted that they worked with it afterwards. They deny everything which the contract calls on them to do and which their reports will show was done.

The issue, therefore, is established on the denials as I have indicated in this presentation. The specific prayer is for relief for non-performance of the contract, and an order for specific performance of the contract henceforth.

Mr. Aurich: With the Court's permission, the defendants will reserve their opening statement until the commencement of their case, at which time I trust it will be of more assistance to the Court than if given now.

The Court: Very well.

Mr. Aurich: However, your Honor, I would like to make a [14] motion to dismiss on behalf of the defendant Shell Development Company. The contract is attached to the bill of complaint. It is a contract between the plaintiffs Peck and Ruddie on the one hand, and one of the defendants on the other, namely, the Shell Oil Company. The Shell Development Company is not a party to that contract. The prayer for relief that the plaintiffs are seeking is twofold: They seek specific performance of the contract and they seek damages for its alleged breach.

Now, it is rather fundamental that you cannot decree specific performance of a contract against a party who is not a party to the contract, nor can you recover damages for any alleged breach of contract by a party not named in the contract, and on those grounds we move that the complaint be dismissed as to the defendant Shell Development Company.

Mr. Hackley: In answer to that, your Honor, it is true that the Shell Development Company is not a party to the contract as such. But the proofs will show the Shell Development Company is merely an alter ego of the Shell Oil Company, Incorporated, which is a wholly-owned subsidiary and affiliate. It performed a large proportion, if not all, of the laboratory and experimental work relating to this contract. Its own attorney, as a matter of fact, was the draftsman of the agreement itself and is a witness to the agreement, as to the signatures of some of the Shell Oil Company executives.

As far as relief against the Shell Development Company is concerned, it is directed to the question of restricting the disclosure to others of the confidences which may have been made to it by the plaintiffs, and for such other and further equitable relief particularly growing out of the subject of developments of this additional product, this substitute product, about [15] which the proofs will show it was developed in the laboratories of the Shell Development Company. I believe, if your

Honor please, we can support the position of the Shell Development Company very adequately in the evidence.

The Court: Assuming that you can, how could a judgment run against the Shell Development Company?

Mr. Hackley: Not as to damages——

The Court: The motion to dismiss does not preclude you from presenting any proof that you may have?

Mr. Hackley: It would preclude us from relief against the Shell Development Company as to the development of a product, your Honor, and as to the disclosure of confidences which my clients made to them.

The Court: How can you render a judgment, on your own statement, against the Shell Development Company when they are not a party to this contract?

Mr. Hackley: The judgment I am asking is an equitable judgment, your Honor, not arising under the contract, but arising under the principles of equity.

The Court: The motion stands submitted, and I will reserve a ruling on it. Proceed.

ALLAN B. RUDDLE,

Called on his own behalf; Sworn.

Direct Examination

Mr. Hackley: Q. State your full name, age and residence address, please.

A. Allan B. Ruddle, 601 O'Farrell Street, San Francisco, and I am fifty-three years old.

Q. Are you the Allan B. Ruddle, one of the plaintiffs in this action? A. I am. [16]

Q. Are you acquainted with Lydell Peck, your co-plaintiff in this action? A. Yes, I am.

Q. Do you know his residence address?

A. Yes; it is 652 Spruce Street in Oakland.

Q. Was Mr. Peck residing, to your knowledge, at that address at the time of the filing of the action here?

A. Yes, and for a long time prior to that.

Q. And for a long time prior to that?

A. Yes, that is right.

Q. How long have you been residing in the City and County of San Francisco, Mr. Ruddle?

A. Since 1936. I lived in Oakland for about ten years prior to that.

Q. Since 1936 you have been continuously a resident of San Francisco County?

A. That is right.

Q. What is your occupation, please?

A. Well, I now work for the Internal Revenue of the United States Treasury Department.

Q. In what capacity?

(Testimony of Allan B. Ruddle.)

A. In the field division.

Q. How long have you been so occupied?

A. For about a year and a half.

Q. Prior to your work with the Internal Revenue Bureau with whom were you associated?

A. James F. Peck. I was in his office for some twelve years, I think, or thirteen, something like that.

Q. Who was Mr. Peck? What was his occupation?

A. James F. Peck was an attorney in San Francisco. He was the father of Lydell Peck.

Q. One of the plaintiffs in this action?

A. That is right.

Q. What type of work did you do when you were [17] employed by Mr. Peck?

A. Well, I did some work in his office, did legal work, that is, did research work for him, helped him in many of his cases that he had.

Q. How long were you associated with Mr. Peck in that way?

A. I think about twelve or thirteen years that I was in his office.

Q. Prior to that what was your occupation?

A. Well, I lived at Merced, and we had a farm, that is, my father, my brother and myself had a farm in Merced. I was born in Merced and practically raised on the ranch.

Q. Are you the Allan B. Ruddle alleged in the complaint of this action to have developed a product known as a core oil for foundry use?

(Testimony of Allan B. Ruddle.)

A. Yes, that is right.

Q. And known under the name of Core-Min-Oil?

A. Yes, I am.

Q. When did you initiate your work with reference to the development of core oils with particular reference now to Core-Min-Oil but leading up to that stage?

A. I had done some work on fireproofing of some lumber with a solution that we were interested in, and I can't recall just who it was, but somebody talked to me about some core oil that they were trying to do, and that gave me an idea that I could make a core oil for foundries out of this solution.

Q. When did this work start, Mr. Ruddle?

A. About the beginning of 1937, I would think. That is a guess on my part, because I haven't any method of arriving at the exact date.

Q. Continue now and describe your work leading up to the development of the product which we are interested in.

A. Well, the first thing I tried to do was incorporate a red oil and a pale oil that the Standard Oil had given me with this solution. I couldn't emulsify, I couldn't get it into one [18] package.

Q. What was the solution that you refer to? Do you remember its composition?

A. Made up of sodium silicate, sodium fluo-silicate, and aluminum sulphate. At first I made up many samples and dried—I dried them first in the sun. I didn't have an oven to cook them in, so I

(Testimony of Allan B. Ruddle.)

just went to the Santa Fe Foundry out in Richmond. That was the first time I had ever been in a foundry. And I went through that foundry and they had an oven there that I put—made a mixture of sand with the solution that I just described, and then in it I had some asphalt that I had melted and put in it, and also some red oil and some pale oil.

The Court: Q. What do you mean by red oil and pale oil?

A. Red oil and pale oil is a mineral oil that the Standard Oil gave me. They said it was a cheap oil that they had very little market for. That is after lubricating oils had been taken from it, I believe they told me. I tried these out at the Santa Fe Foundry and the results were—as a matter of fact, I didn't get any encouragement at all at first, but I kept working with it, and I took the materials to my apartment here in San Francisco, at 715 Leavenworth Street, and there I worked on it for months. Then I took it to the Kingwell Foundry, was the next foundry I went to.

Mr. Hackley: Q. Where is that located?

A. That is located here in San Francisco, on Natoma Street. Frank McDonnell was a man that either had an interest in the Kingwell Foundry—I talked to him about this, and he made the arrangement for me to go down to the Kingwell Foundry, and there we started making the cores out of a red oil that I used then. That is a brass foundry, and

(Testimony of Allan B. Ruddle.)

I remember that they made a number, [19] quite a number, of cores. I was there for two or three months off and on, several times a week. They poured some brass castings there.

Mr. Hackley: Q. Continue, Mr. Ruddle, without quoting what others said to you; just your own experiences and observations.

A. Well, I watched them take the castings to the lathe, and in the lathe, why, there were no bubbles under the surface of the castings, and I understand that is one of the objections in a brass foundry.

Q. Confine yourself to your own observations and experiences, please, Mr. Ruddle.

A. Well, I took the—I think it was Mr. Woodin of the Standard Oil Company took me over to the Macauley Foundry.

Q. Where is that located?

A. That is located in Berkeley.

Q. Do you know the address?

A. It is on Carlton Street, but I don't know the address. It is in West Berkeley, down near the water. And there I started in and worked many months with the—the difficulty that I had at the Macauley Foundry, it made perfect castings, but I couldn't get the proper friability, and also some of the time I never—at that time I couldn't [20] understand why, when I put the cores in the oven, that some would be good and others would not. It seemed they were baked under the same circumstances.

(Testimony of Allan B. Ruddie.)

Q. What formula were you using for your core oil at this time?

A. At the beginning I was using red oil.

Q. That is a petroleum?

A. Together with this formula.

Q. That is a petroleum product, is it?

A. That is a pretroleum product, yes, the distilled product that I got from the Standard Oil Company. And I think I used a little red oil that I got from the Shell Oil Company. I think that Jack Montgomery, who had charge of sales or something, part of the Shell Oil Company, gave me a sample of red oil of theirs and I tried it. But, as I say, I had trouble with the friability.

Q. Would you define what you mean by "friability," please.

A. Well, when we would bake castings—I mean, bake the cores and castings were poured, then you couldn't get the core out of the inside of the casting, that is, without a great deal of difficulty. And one day I was down at the Philadelphia Cores talking to my friend Dr. Cleveland down there, and I was asking about the softening of the cores, and also I told him the cores were too good, I couldn't get them to pour out the castings. He said, "Well, the Shell Oil Company—I mean the Union Oil Company had left a gallon of some asphalt emulsion here for me. If you want to take that and try it, you are perfectly welcome to it. I got it—they gave me it to waterproof some corrugated paper boxes."

(Testimony of Allan B. Ruddle.)

And so I said, "Well, yes, I will be very glad to have it and try it."

After taking it and running many tests with it, because I could determine the right amount, why, I developed what I thought [21] at the time was an outstanding core oil, that is, it had a baking time that saved about two-thirds of the drying time in an oven.

Q. Against what type of core oil?

A. Against linseed oil or Houghton Oil. Houghton Oil was used then in the Macauley Foundry.

Q. Did you make comparative tests yourself of baking time of cores made with your core oil and cores made with Houghton Oil and linseed oil?

A. Yes, many of them, hundreds of them.

Q. And you reached the conclusion that your cores would bake in approximately one-third of the time of the others?

A. Yes, and even less. Smaller cores were a great deal of time less than that.

Q. The difference was progressively greater as the cores became smaller?

A. As the cores were larger, the baking time was nearer alike.

Q. That is, there was a less difference between them, do I understand? A. Yes, there was.

Q. Just what formula were you using for your core oil at the time you were making these last cores you were referring to?

A. Well, I used—do you want a description of the solution?

(Testimony of Allan B. Ruddie.)

Q. I would like to have a description of the formula of the exact product that you found most superior.

A. The solution was made by using a gallon of water, an ounce of aluminum sulphate, and one ounce of sodium fluo-silicate, and two gallons of sodium silicate. Now, I mixed the sand by using 1750 cc's of sand, dry sand, and I mixed 80 cc's of solution, which was 32 Baume, and 50 cc's of asphalt emulsion. That seemed to be about the right consistency for moisture. [22]

Mr. Hackley: Q. You say you used 80 cc's of solution. What do you refer to as solution?

A. That is the solution that I described there. Is that what you mean?

Q. The sodium silicate, water, aluminum sulphate and sodium fluo-silicate?

A. That is right.

Q. In the proportion that you mentioned?

A. Yes.

Q. Then you took 80 cc's of that product?

A. Yes, that is right. The reason I put them in two packages was I was unable to put them in one package. They would settle out.

Q. Just what do you mean by that? Put what inside two packages?

A. I could keep the sodium silicate solution and the asphalt emulsion in the same package without agitating it and stirring it up. They would separate if let stand.

(Testimony of Allan B. Ruddle.)

Q. So you stirred them in two separate units?

A. Yes, and I used them that way for that purpose. [23]

Q. Draw off one and draw off the other one?

A. Yes, though you could put them together, and you agitate them in as you put them in. They work the same.

Q. As long as they were agitated and thoroughly mixed, they could be used as a single product?

A. Yes, I made them separately because I wanted to be sure I had the right proportions of each one.

Q. Will you describe exactly what your procedure was.

A. We mixed out the 1,750 cc's of sand and in it we made a little hole in the center of it, a puddle to put in the solution, 80 cc's of solution, and then mixed that into the sand, and then put the asphalt emulsion in, and then mixed it.

Q. You have used the word "we" there. Whom do you include in the "we"?

A. I was thinking of the coremakers in the foundries who worked with me on it.

Q. Did you do all these things yourself as well as do them with others?

A. I did some myself, and then I would turn them over to the coremakers and tell them how to do it at the Macauley Foundry. A number of the coremakers there would try it for me.

Q. This is all at the Macauley Foundry?

(Testimony of Allan B. Ruddle.)

A. Yes. All this I am describing is at the Macauley Foundry.

Q. This all occurred approximately when, that is, this last formula that was finally developed and used?

A. Well, it was probably the fall of 1937, I would guess, and in the first part maybe of 1938.

Q. Do you remember the names of any of the coremakers who worked with you at Macauley's in these later months?

A. Yes. The one that Mr. Olson, who was manager then of the Macauley Foundry, assigned to it was Mr. Otto Gosh, who was a coremaker on engines. He made the engine heads, and he thought he would— [24] told him that when he had a little extra time, if he would work with this and teach me something about the core business. And he worked with it for months with me. I tried to interfere with them as little as possible. I baked my cores generally at the noon hour, when they would turn the ovens off and go to lunch. They would be gone about three-quarters of an hour. I would make the cores up, or they would make them up, and I would bake them during that time.

Q. Did you pour any castings or have any castings made with these cores that you have described?

A. Yes, they poured one or two generally. I don't know whether they did every day or not they were there working. They didn't work, I think, but five days a week at that time, and they poured

(Testimony of Allan B. Ruddle.)

sometimes twice a week. But when they did, they nearly always for a period of several months poured one or two castings for me.

Q. Using your cores?

A. Yes, that is right.

Q. What were the castings like? Can you describe them with reference to their characteristics?

A. Well, I am not a foundry man, but I took it to the foundry people,

Mr. Hackley: Q. I would like you to describe the casting, not what somebody else said about it, Mr. Ruddle. If the type of casting that resulted has a foundry name, you can, of course, use that name.

A. Well, they were perfect castings in every instance. We never had—I never had a failure in any casting that was poured all the time I worked with this, and if you go through the Macauley Foundry or the Vulcan Foundry or any foundry you will see a great loss in castings.

Q. You know of no single casting lost when poured with one of [25] your castings?

A. Never had one lost that I poured.

Q. How is the surface of the casting which was adjacent to the core? Was it smooth, rough or what?

A. Very smooth, yes, it is. It makes a very smooth core, and, therefore, the casting is very smooth.

Q. Did the cores appear to you to act satisfactorily from the standpoint of making castings?

(Testimony of Allan B. Ruddie.)

A. Yes, the cores were excellent. The necessary part of that was in the pouring of the casting.

Q. Were the castings satisfactory that were made with those cores, so far as you know?

A. Yes, they were, so far as I know.

Q. When did you finally reach the conclusion that you had hit upon a satisfactory formula, that is, the formula which you have just described—approximately the date?

A. After we had determined the right proportion, as near as we could, of the amount of asphalt emulsion and put in the solution, we then felt that we had the product ready for somebody to market. While we knew that we were having trouble with the softening of the cores, which was later found out to be the gas from the fires, why, we thought then that we were ready for somebody to take it and market it.

Q. You have described this question, this problem of softening of the cores. Will you describe that a little more? What did you determine in that connection?

A. Well, we did not determine at that time——

Q. I mean with reference to the condition; what do you mean by softening of the cores? Will you describe that?

A. Well, it was a peculiar thing, that we would put the cores, several of them, in the oven and for some reason some would have a soft surface, powder, and just go to pieces like it had [26] nothing

(Testimony of Allan B. Ruddle.)

in it, like pure sand, and others would come out and be perfect.

Q. Under apparently equal conditions you had inconsistent results, is that right?

A. Yes, some days we would bake those cores all day long and we wouldn't lose a core, and other times, why, we would lose them. I would even make a new solution, thinking maybe that was the reason for it.

Q. This was all in the latter part of 1937, as I understand you?

A. Yes, that was in the latter part of 1937.

Q. Now, at this point did you do anything with reference to possible commercialization of your product?

A. Yes, we took the product—I talked to Mr. Peck, Mr. James F. Peck and Lydell Peck about it, and we determined that it was ready now for some company to take hold of it, that would find this little trouble that we had on the softening of the cores.

Q. That is, softening of some of the cores?

A. Yes. We thought it was something that could be determined very easily chemically, so we took it to the Standard Oil Company, I believe Mr. Harry Collier of the Standard Oil Company—

Q. You mean Harry Collier, now president of the Standard Oil Company?

A. Yes, he is president of the Standard Oil Company, and he got us in touch with the American

(Testimony of Allan B. Ruddle.)

Bitumuls Company, that is, the asphalt department of the Standard Oil Company, and the American Bimutuls Company sent their chemists from their American Bitumuls laboratory over to Macauley Foundry, and they became very much interested—in fact, they submitted a contract to us. We didn't like the terms of the contract, so we didn't go into the contract with them.

Q. Did you discuss the product commercially with any other companies?

A. Yes, we talked to the General Petroleum Company [27] and Union Oil Company, and also the American Brake Shoe Company. The American Brake Shoe Company were interested in it, and, in fact, since Shell Oil Company has had it, the American Brake Shoe Company have wanted the product. I so related that to the Shell Oil Company.

That is, they wanted to use the product at some of their foundries.

Mr. Hackley: Q. Did you take the product during this period to the Shell Oil Company, the defendant in this action?

A. Yes, we did—I did.

Q. Now, describe precisely what you did in that connection? A. Well—

Q. Particularly starting now with the very inception of your first contract with the Shell or any representative of the Shell Company.

A. My best memory of how I first contacted the Shell Oil Company was I was walking up Market

(Testimony of Allan B. Ruddle.)

Street from the Ferry Building and I overtook Floyd McSwain, who was then manager of the Shell Oil Company, the asphalt department of the Shell Oil Company, and I told him about this product, told him I thought it would probably be a new outlet for asphalt emulsion, and described it to him as best I could.

Q. What do you mean by "new outlet for asphalt emulsion"?

A. Well, there was a new market for it, and he said the Shell Oil Company was interested in finding a market for any of their products. I told him that we had been dealing with the American Bitumuls Company. He asked who in the American Bitumuls Company, and I told him—I don't recall the name—it was Mac somebody, and he said he had worked for this particular man, and he said [28] he wasn't surprised that they would not give us a good contract knowing this man as he knew him. And he said the Shell Oil Company are the people to deal with; they have greater facilities, more salesmen; they can sell anything that they get hold of; anything that they want to sell, they can sell it. In fact, he said, "We have five thousand salesmen," and he said, "If they really take this, they would really sell it."

Q. This is Mr. McSwain?

A. Yes, sir, Mr. McSwain told me that when I first met him.

Q. When and where was this first meeting with Mr. McSwain with reference to date and place?

(Testimony of Allan B. Ruddle.)

A. As I recall, it was either the end of 1937 or the first part of 1938. I can't recall just the exact date, but it was on Market Street, as I recall.

Q. In San Francisco?

A. Yes. I have known Mr. McSwain for many years. I went to school with him. We were always friendly. [29]

Q. Was anybody else present at or a party to this discussion between yourself and Mr. McSwain?

A. No, not at that time.

Q. And you said that took place the first part of 1938. What do you mean by that, the first month, or the first day?

A. It might have been January; it might have even been February, 1938. As I recall it was—it might even have been in the latter part of 1937; I won't attempt to fix the date.

Q. Right in that period, however?

A. It was in that period; it was just prior to all of the negotiations.

Q. By the way, before you met Mr. McSwain had you attempted in any way to secure patent protection on your developments?

A. Yes, we made application, I think, for two or three patents. The applications were in. I think there were three of them.

Q. Do you recall the numbers of any patents that were issued on those applications, assuming they did issue?

A. No, I wouldn't recall the numbers. I know that two of them have since issued the patent.

(Testimony of Allan B. Ruddle.)

Q. I show you Patent No. 2,193,346, issued March 12, 1940, to Allan B. Ruddle, and ask if that is one of the patents which you refer to?

A. Yes, that is one of the patents.

Q. The application for that patent, if I understood you, was filed prior to the time you met Mr. McSwain?

A. Yes, this application is dated December 10, 1937.

Q. And if I understood you, it was shortly after the application for the patent——

A. Yes, it was after this, I remember that, because I told him at that time that we had made application for patent.

Mr. Hackley: Let's take the witness' testimony; I ask that the patent be received in evidence as Plaintiffs' Exhibit 1.

The Court: It may be admitted and marked. [30]

Mr. Hackley: United States Letters Patent 2,-193,346, issued to Allan B. Ruddle March 12, 1940.

(The letters patent referred to were marked "Plaintiffs' Exhibit No. 1" in evidence.)

Mr. Hackley: Q. I show you a second patent, which is 2,204,913, and again ask you if that is a patent upon an application which you have referred to in your last testimony? A. It is.

Q. And that again——

A. That is dated September 25, 1937.

Q. Referring to the application?

A. Yes, that is right.

(Testimony of Allan B. Ruddie.)

Q. That again was prior to the time you met Mr. McSwain? A. That is right.

Q. Did you mention the fact to Mr. McSwain that you had only one application, or more than one application pending?

A. As I recall, I mentioned that I had two applications—three. There is another one besides this that was abandoned.

Q. But at one time you did have as many as three applications pending on this product; is that correct? A. Yes, that is right.

Q. And two have issued into patents?

A. That is right.

Q. Those are the patents which you have now identified? A. Yes.

Mr. Hackley: I ask that this second patent identified by the witness be received in evidence as Plaintiffs' Exhibit 2, being Patent 2,204,913, issued June 18, 1940, to the witness.

The Court: It may be admitted and marked.

(The patent referred to was marked "Plaintiffs' Exhibit No. 2" in evidence.)

Mr. Aurich: What is the purpose. [31]

Mr. Hackley: To illustrate the testimony.

The Court: Q. What is the date of the patent that you abandoned?

A. I don't recall the date of it.

Q. Was it following the second patent?

A. That is possible. I wouldn't recall the date without looking it up.

(Testimony of Allan B. Ruddie.)

Mr. Hackley: That application will be brought into the witness' testimony before we conclude.

Mr. Aurich: For the purpose of the record, your Honor, I may state that plaintiffs' counsel and I have stipulated that uncertified copies of letters patent may be introduced in evidence with the same force and effect as if certified.

Mr. Hackley: I overlooked one thing: Not only that stipulation, but also the understanding we had—I believe you will stipulate that we will divide the cost of the reporter's per diem and the Court's copy of the transcript, and that the costs of those two items may be taxed as costs in this case?

Mr. Aurich: That is correct.

Mr. Hackley: Q. Continue with your description of this first discussion you had with Mr. McSwain which you have said was either the very latter part of 1937 or early in 1938.

A. Mr. McSwain described how big his company was, how well he could sell it. I told him that we were afraid of Shell Oil Company or any large company that marketed things all over the world, because we were afraid that we would be mistreated.

Q. Did you explain what you meant by "mistreated"?

A. Yes; we were afraid that Shell would take this product and either shelve it or develop something out of it and sell it elsewhere, even sell abroad. And he assured me that they would never do such

(Testimony of Allan B. Ruddie.)

a thing. In fact, I told him that if I gave him this idea of marketing asphalt emulsion that they might take it for [32] themselves. And in that connection we were discussing the size of the market. I told him that we had received a letter from a foundry where it described the number of gallons of linseed oil that was on the market to be used.

Mr. Aurich: Perhaps I am a bit confused. Do I understand the witness is still talking about the discussion that he had with Mr. McSwain on Market Street?

Mr. Hackley: I intend to ask him that, Mr. Aurich. I don't know whether he is now adding to that, other discussions.

Q. Confine yourself, in this first description, only to the first conversation, Mr. Ruddie.

A. I misunderstood you.

Q. Have you gone a little bit beyond that?

A. Yes.

Q. At the risk of repetition, confine yourself now to the very first discussion and tell us, just as you remember it, the substance of that discussion between Mr. McSwain and yourself.

A. As I recall, I talked to him generally about it, and he was very much interested, and suggested that I meet him at his office at a later date, which was within the next day or two.

Q. Did you tell him anything about what you had in the way of a core oil on the asphalt emulsion?

(Testimony of Allan B. Ruddie.)

A. Yes, generally I did; yes. That is what made him interested.

Q. Did Mr. McSwain say anything to you about whether or not it was new to him to use asphalt in a core oil?

A. Yes; he said that they knew nothing about the core oil business, had never sold a core oil and knew nothing about it; that it was all new to them, but the idea of finding a new market for one of their products interested them.

Q. And he invited you, if I understand you, to come to his office immediately afterward and discuss the thing thoroughly?

A. Yes; that was within, I think, the next day or two I went to [33] his office.

Q. What was the substance of your next discussion with Mr. McSwain?

A. As I recall——

Q. Fix it as to time and place, also if anyone else was present tell us who.

A. As I recall that, I went to Mr. McSwain's office within the next few days after that, anyway, meeting him on Market Street, and while there Mr. Harsch, if I remember rightly, was there, and possibly Mr. Waller; I think he was, too.

Q. Who was Mr. Harsch?

A. Mr. Harsch was assistant to Mr. McSwain.

Q. In the asphalt department of the Shell Oil Company?

(Testimony of Allan B. Ruddle.)

A. In the asphalt department, yes, that is right.

Q. Who was Mr. Waller?

A. Mr. Waller worked in the same department. He was an engineer in that department, that assisted Mr. McSwain.

Q. Is that Mr. Arthur C. Waller?

A. That is right.

Q. Was anyone else present than yourself and Mr. McSwain, and possibly Messrs. Harsch and Waller?

A. No, that was all at the first meeting, as I recall it.

Q. And Mr. Peck did not go with you?

A. Not at that time, no.

Q. Now, tell us especially what the discussion was at this second meeting, and also as to approximately its date. Would that be again very late in 1937 or very early in 1938?

A. Yes, that is right.

Q. All right; continue.

A. Well, we discussed the subject there. As I recall it, we met—I told them that I had done this work over at the McCauley Foundry, and as I recall, the next—possibly the next day we went over to McCauley Foundry—that is, Mr. McSwain, Mr. Waller, and I am not so sure that Mr. Ray Harsch went along; but I recall that Mr. Waller and Mr. McSwain went over. [34]

Q. That is the same McCauley Foundry where you carried on your tests?

(Testimony of Allan B. Ruddle.)

A. Yes, that is right. I took them in to a bench where I had been working and introduced them to Otto Gosch, and Otto Gosch had been making these—he made some Union Diesel heads out of it that he was very much—he was very proud of.

Q. Made some cores for Union Diesel heads?

A. Yes, that is right.

Q. And cast heads from those cores?

A. Yes.

Q. Those cores were made with Cor-Min-Oil?

A. Yes, they were.

Q. Continue, Mr. Ruddle.

A. And he was very proud of them, and he showed these to Mr. McSwain and Mr. Waller, and then Mr. Waller went through the foundry trying to find out something about the foundry business.

Q. Were any cores made by you at that time, or by anyone else, for Mr. McSwain's benefit?

A. As I recall, yes, that I made some cores up at that time, and I think the following day, I think, we went back to see—we had a casting poured that evening—to see how the casting came out. I think Lydell Peck went with us the second day, if I recall, and I also think that Mr. Spotswood met us there the second day.

Q. This again is at the McCauley Foundry?

A. At the McCauley Foundry, yes.

Q. This is all within a few days of the very first meeting that you had with Mr. McSwain on Market Street; is that right?

A. That is right.

(Testimony of Allan B. Ruddle.)

Q. What was done at this second meeting at the McCauley Foundry? What took place?

A. Well, we went out to see the casting that had been poured. [35]

Q. You poured a casting the first day?

A. No, no, that was—you said the second day.

Q. Yes. I didn't understand you; I thought you said that you went out to see a casting which had been poured.

A. As I recall, we made a core the first day that we were there, and asked that they pour a casting for us, and the following day—and the following day, why, we went over to see the casting that had been poured.

Q. What else took place? Anything?

A. Well, there was a general discussion that went on there for several days. We went back to San Francisco. The next day I went to Mr. McSwain's office, as I recall. That may not have been the very next day, but the meetings continued, and it was decided then that some work would be carried on over at the Vulcan Foundry.

Q. Decided by whom?

A. By Mr. McSwain, I think. I think Lydell Peck had something to do with it, because he was a friend—had known Harold Martin, gone to school with him.

Q. Who was Harold Martin.

A. Harold Martin was manager of the Vulcan Foundry.

(Testimony of Allan B. Ruddie.)

Q. Shell proposed, did they, that these tests be taken over to the Vulcan Foundry? A. Yes.

Mr. Aurich: I object to that as leading, your Honor, contrary to the witness' testimony he just gave.

The Court: It is leading.

Mr. Hackley: Q. Mr. Ruddie, will you give us the precise picture of how it happened that the test work was taken over to the Vulcan Foundry?

A. Well, the Shell Company said, "Now, we really want to—in order to see this we ought to take it someplace where we can run some tests of our own on it, so we can witness it," and Mr. Waller was assigned to that to represent them and watch it. And Mr. Spotswood was assigned to the job of doing [36] the work. Waller was to watch it and report to McSwain about it.

Q. Then what took place?

A. Well, the work was carried on there at the Vulcan Foundry for several months. One of the first things that Mr. Spotswood determined was the cause of the cores softening. That was done within the next week or two, or three weeks, anyway, after he went to the Vulcan Foundry. He determined that the cores were softened by the gas from the fires.

Q. Is that this same core softening you referred to a little earlier, that produced apparently inconsistent cores under the same conditions?

A. Yes, that is what I tried to describe then.

(Testimony of Allan B. Ruddle.)

Q. Will you describe exactly what was discovered to be the cause of that inconsistency?

A. Well, the carbon dioxide gas that is generated from a burning oil affected the core, because it acted on the sodium silicate and caused it to disintegrate.

Q. That determination was made by Mr. Spotswood, you say?

A. Yes, that is right. I witnessed a demonstration up in Martinez. They had an electric oven and they caused CO₂ gas to go into the oven, and it would destroy the core, and then after the oven was freed of gas, why, they would make a perfect core. That is the way it was determined.

Q. Describe what you mean by the oven being freed of the gas. How was that accomplished?

A. I didn't understand the question.

Q. I say, describe what you mean by the oven being freed of gas, and describe how that was accomplished, if you know.

A. You mean how we got the gas out of the electric oven?

Q. Out of any oven.

A. Oh, if the cores are baked with a hood over them, or anything that keeps gas away from the cores, the cores are perfect.

Q. Were tests made along that line in your presence?

A. Oh, yes, many hundreds of tests. [37]

Q. At what time was it discovered, as far as you

(Testimony of Allan B. Ruddle.)

can recall, that the presence of carbon dioxide generated from the open flame was causing the cores, on occasion, to soften in the baking?

A. Could I have the question? I didn't get the first part of it.

(The question referred to was read by the reporter.)

A. You mean when Spotswood determined it? Mr. Hackley: Q. Yes.

A. That was within, I would think, three or four weeks, anyway, after the Shell started their work on it at the Vulcan Foundry.

Q. And that would put it in the month of what?

A. February; I would say that is in the February report of Spotswood, anyway.

Q. In 1938? A. In 1938, yes.

Q. You referred to a report. What did you mean by the February report of Mr. Spotswood?

A. There were two reports given to us, one—I think it is TAC No. 79, is the first, and TAC 90 is the second. Those are the only two reports that we had received until after the complaint was filed, I believe—anyway, until after the attempted cancellation.

Q. When did you receive the first of these two reports you speak of, approximately?

A. I can't recall when. I think Mr. McSwain, though, gave me those reports.

Q. Those were given to you by Mr. McSwain?

(Testimony of Allan B. Ruddie.)

A. As I recall, it was, but I don't remember now how I got them.

Q. I am going to show you a document——

Mr. Aurich: Let me see it.

A. That was an earlier report.

Mr. Hackley: Q. I show you a report of Shell Oil Company, Martinez Refinery No. TAC 79, dated February 24, 1938, and ask you if that is the report you just referred to?

A. Yes, that is the one. [38]

Mr. Aurich: We have no objection to the admission in evidence of those reports, Mr. Hackley.

Mr. Hackley: All right; then I will offer the report identified by the witness as Plaintiffs' Exhibit 3, being Shell Oil Report TAC 79, dated February 24, 1938.

The Court: It will be admitted and marked.

(The report referred to was marked "Plaintiffs' Exhibit No. 3" in evidence.)

Mr. Hackley: Q. Did you state when you received this report, Plaintiffs' Exhibit 3, Mr. Ruddie?

A. Could I state when?

Q. Yes.

A. No, but it wasn't long after—I think it was somewhere near that time, because we were discussing the CO₂ gas item, and they rendered us a report about it, I know that.

Q. Did you receive it before or after you made any contract with the Shell Oil Company?

A. I wouldn't recall.

(Testimony of Allan B. Ruddie.)

Q. I will show you a report, TAC 90, dated March 22, 1938, likewise the Shell Oil Company, and carrying the signatures of E. H. Spotswood and L. J. Snyder, and ask you if that is the second report you just referred to?

A. Yes, that is right.

Mr. Hackley: I offer the last report identified by the witness as Plaintiffs' Exhibit 4, Report TAC 90, dated March 22, 1938, of the Shell Oil Company.

(The report referred to was marked "Plaintiffs' Exhibit No. 4" in evidence.)

Mr. Hackley: Q. Will you continue with your description of the work that was done in February and through March of 1938 at the Vulcan Foundry with reference to Core-Min-Oil, tests of the product, of cores and castings, and so forth?

A. Well, I know I went to the Vulcan Foundry several days a week with Mr. Waller over a period that ranged for several months—two or three months, [39] anyway, and we used to go there several times a week and witness the work that was going on there. It was carried on both at the Vulcan Foundry and up at Martinez, and we used to go each place.

Q. Who is "we"?

A. Mr. Waller and myself.

Q. Who carried on the actual working in the foundry? Do you remember the names of any of the men?

A. Yes; there was a core maker there by the

(Testimony of Allan B. Ruddie.)

name of Manuel; I don't know his last name. But Manuel did the work on the cores there, and the Shell Company brought an electric oven down there, and then Spotswood did most of the work on the cores. He was there to take core boxes and make up the cores and bake them in his electric oven.

Q. That is at the Vulcan Foundry?

A. At the Vulcan Foundry, yes.

Q. Did anyone else at the Vulcan Foundry work on or in connection with this core making with Core-Min-Oil?

A. No, I think he is the only one that I saw make anything out of it. They were awfully busy when they were working, and I think they only worked about five days a week, but they were busy when they were there.

Q. Were any castings poured of the cores made in February and March of 1938?

A. Yes, there were many castings poured there, mostly of Merco Nordstrom valves. They had a contract with the Merco Nordstrom Valve Co., and they made lots of Merco Nordstrom valves, I know, at that time, and we used lots of those in that.

Q. Did you observe any of the cores that were made by Mr. Spotswood and by this man Manuel which you speak of, with Core-Min-Oil?

A. Oh, many of them.

Q. Confine yourself to February and March, or January, February and March, 1938. You observed that during that period, did you?

(Testimony of Allan B. Ruddle.)

A. Yes, I did.

Q. What were the nature of those cores made with Core-Min-Oil in [40] comparison or contrast, as the case may be, with the cores made in like manner at the McCauley Foundry?

A. They were the same. As far as I could tell, they were the same.

Mr. Hackley: Q. Were any castings poured from cores to your knowledge made at the Vulcan Foundry?

A. Many of them.

Q. Were those castings poured at the Vulcan Foundry?

A. Yes, many of them at the Vulcan Foundry.

Q. You understand that this is in that period January through March of 1938?

A. Yes, that is what I am testifying to.

Q. Did you observe any of those castings?

A. I did.

Q. How did they compare or contrast, as the case may be, from your observation, with the castings which you testified were made with Core-Min-Oil cores at the McCauley Foundry?

A. They seemed just the same, as far as I could tell.

Q. Did you make any effort to observe or determine the percentage of castings, if any, that were lost in the pouring at Vulcan Foundry using Core-Min-Oil cores?

A. None were lost. There was never one lost with anything poured with this material while I was present.

(Testimony of Allan B. Ruddie.)

Q. Did Mr. McSwain personally observe any of the work that was done [41] at the Vulcan Foundry with reference to the cores that were made, or castings that were poured therefrom, to your knowledge?

A. Yes; I went with him several times.

Q. Did he express himself to you on the cores and castings, what he thought of them?

A. Yes, he did.

Q. What did he say? In this, again, I want you to confine yourself to the period from January through March of 1938.

A. Well, he was very enthusiastic about the products that we were making.

Q. What did he say? Can you describe his words? Give the substance of his statements.

A. Well, he said they looked as good as any cores that he—that is, comparing the other cores over at the Vulcan Foundry, he said they looked just the same to him.

Q. Did he observe any of the castings that were made from those cores?

A. Yes; we went out, and went with both Mr. McSwain and Mr. Waller, out and examined many castings that were poured, and they commented on the fact how smooth the castings were.

Q. Mr. Waller and McSwain did?

A. Both of them did, yes.

Q. Did Mr. Waller ever comment on the cores themselves? A. Oh, yes, many times.

(Testimony of Allan B. Ruddle.)

Q. What were his comments?

A. That they were perfect cores—outstanding cores. They were very enthusiastic about the material we had.

Q. Did Mr. Spotswood ever discuss cores or castings made from the cores with you, express himself on that?

A. Oh, he did, yes, many times.

Q. What were his statements and expressions?

A. He was very enthusiastic, too, about the wonderful cores that we were making.

Mr. Aurich: Is this still the period between February and March, 1938? [42]

Mr. Hackley: Yes.

Q. That is correct, isn't it, Mr. Ruddle?

A. That is right.

Mr. Hackley: I so understand all of his testimony, Mr. Aurich.

Q. Did you ever have any discussions or was anything said about any commercial arrangements between yourself, or yourself and Mr. Peck, and the Shell Oil Company, relating to Core-Min-Oil?

A. Why, yes, that was the reason that I went to the Shell Oil, why I talked to McSwain in the first place.

Q. Will you describe what you said to Mr. McSwain with reference to your fears, with reference to what you called your idea, and also describe what you mean by your idea?

A. Yes. When I first talked to Mr. McSwain I

(Testimony of Allan B. Ruddie.)

told him that this looked like a new market for asphalt, and that we were afraid that we would lose this idea if we took it—divulged everything we knew to the Shell Oil Company; that they themselves were big marketers all over the world, and we were afraid if we told him, and he said, “Shell Oil Company would never treat you that way.” I remember saying to him, “Well, so long as you are with the Shell, I wouldn’t feel afraid.” “Well,” he says, “You needn’t to feel [43] afraid, anyway.”

Q. Was anything ever said about a contract between yourselves and the Shell Oil Company?

A. Well, after we had run these tests out here at the Vulcan Foundry, Mr. McSwain asked for a contract.

Q. Tell us when, where, and under what circumstances.

A. After we had determined the CO₂ gas—how to prevent the CO₂ gas by putting hoods over the cores or an indirect oven.

Q. That is, how to overcome this inconsistency you have described?

A. That is right. Then Mr. McSwain wanted to talk contract.

Q. Did he discuss contract with you—bring up the subject himself? A. He did.

Q. Who was it first mentioned the making of a contract, you or Mr. McSwain?

A. Mr. McSwain was the first one to ask for a contract.

(Testimony of Allan B. Ruddle.)

Q. What did you say?

A. We told him all right, we would enter into a contract with him. Well, he said he would have his legal department get up something in the way of terms of the contract that we could discuss.

Q. Was that done?

A. Yes, that was done, and that was brought over to Mr. Peck's office at one time.

Q. Was a contract ever signed as a result of those negotiations? A. It was.

The Court: Q. Who was the contract drawn by? A. By the Shell Oil Company.

The Court: "James F. Peck of San Francisco, California, hereby declares that he has no interest in the above agreement and the subject matter thereof, and consents and approves of its execution."

Q. What does that mean?

A. Well, the Shell Oil asked for that to be put on there; they wanted to know whether he had any interest in it. Lydell Peck is the one who had the interest in it, and not [44] his father, but they wanted him to sign the contract if he had any interest.

Mr. Hackley: Q. Incidentally, what was Mr. James F. Peck's age at the time this contract was signed?

A. Seventy-eight, as I recall.

Q. I show you a document entitled, "License Agreement," bearing date April 8, 1938, and ask you if you can identify it?

(Testimony of Allan B. Ruddle.)

Mr. Aurich: I will stipulate that is the contract that was entered into between the parties, Mr. Hackley, if that is agreeable.

Mr. Hackley: Q. That is the agreement?

A. Yes, that is the agreement.

Mr. Hackley: I offer as Plaintiffs' Exhibit 5, License Agreement dated April 8, 1938, between Shell Oil Company as licensees and Messrs. Lydell Peck and Allan B. Ruddle as licensors, the Shell Oil Company signing by F. A. C. Guepin, vice-president, and A. R. Bradley, secretary, with J. F. McSwain as a witness; the document bearing the signatures of Messrs. Lydell Peck and Allan B. Ruddle, and something in the nature of a waiver, or whatever it may be, appended thereto, signed "James F. Peck," witnessed by J. Gratama.

Incidentally, Mr. Aurich, we can identify, can we not, Mr. Gratama, as attorney for the Shell Development Company?

Mr. Aurich: No, I can't identify him that way. I can identify him as a person who is employed by Shell Oil Company. I don't know his exact capacity at all. He is an attorney-at-law, I am advised.

[45]

Mr. Hackley: And annexed to the document is the evidence of authority of the signatories of Shell Oil Company on the document, subscribed by A. R. Bradley, secretary, with seal annexed, likewise bearing the date April 8, 1938.

(Testimony of Allan B. Ruddle.)

(The license agreement referred to was marked "Plaintiffs' Exhibit No. 5" in evidence.)

Mr. Hackley: Q. At the time you took Core-Min-Oil to the Shell Oil Company at the outset of your discussions with them, did you make any statements or representations to Shell as to whether or not the product was in finally developed form or otherwise? A. Yes, I did.

Q. Describe what you said in that connection.

A. I described the product to the Shell.

Q. To whom did this description go?

A. To Mr. McSwain, to Mr. Waller and Mr. Spotswood, and Mr. Gratama and Mr. Zublin, and I think Mr. Warren.

Q. Mr. Harsch?

A. There were many of them there.

Q. Did you describe it to Mr. Harsch?

A. Mr. Harsch, too. In fact, Mr. Harsch graded some sand, thought maybe he could overcome the—. The gas would also cause the solution to go down a little bit and make it stronger, or harder, on the bottom of the core, and Mr. Harsch thought by grading the sand we would be able to overcome that. But anyway I described to the Shell that we were having this difficulty. [46]

Q. Mr. Ruddle, you have named here first a number of people who have not otherwise been identified in the record. Who was Mr. Gratama?

A. Mr. Gratama was one of the people that ne-

(Testimony of Allan B. Ruddle.)

gotiated the contract, with Mr. McSwain, and represented that he was attorney for the Shell Oil Company, and Shell Development Company, he told us, the patent—the head of the patent department, he told us.

Q. And who was Mr. Zublin that you mentioned?

A. Mr. Zublin also worked for the Shell Development Company. He was an engineer or chemist?

Q. Mr. Warren?

A. Mr. Warren was a chemist up at Martinez, that worked in the asphalt department.

Q. Shell Development Company or Shell Oil Company?

A. No; Shell Oil Company, I think.

Q. You have mentioned a number of people to whom statements were made with reference to the state of the development of your product. Were these statements made all at one meeting, or at different times?

A. No, no, this was something we talked of—went over a period of weeks. Everybody discussed part of it; everybody was trying to find the reason for it, that I talked to.

Q. Did you represent to the Shell Oil Company, or anybody in connection with it, that the product was in completely developed form when you first went there?

A. No, we did not.

(Testimony of Allan B. Ruddle.)

Mr. Aurich: Objected to as leading.

The Court: It is leading.

Mr. Hackley: Q. You have described the fact that you had told these various men in the Shell Oil Company about this carbon dioxide [47] problem; you have described the solution which was discovered for that problem. Were any other problems in connection with Core-Min-Oil described to anyone, or were there any other problems?

A. Oh, yes; we were talking—we discussed with them the fact that the Core-Min-Oil dried on the benches badly; we had to put wet sacks over it to keep it so they could use it.

Well, there were—I have described the gas that was bothering, and how we overcame that by putting covers over it or had an indirect oven.

Q. Do you remember anything else in that connection?

A. It seems to me there were a few minor things that were going to be corrected, but I don't recall just at this minute.

Mr. Aurich: I move to strike out the answer of the witness, your Honor, unless the proper foundation is laid as to time, place, and parties present. I have no way of knowing when these conversations occurred.

Mr. Hackley: I will go into that, Mr. Aurich.

Q. You have stated that you had described these things. To whom did you describe them? All of the individuals that you have named?

(Testimony of Allan B. Ruddle.)

A. Yes, all the individuals I mentioned a moment ago; not all at [48] one time, but at different times. This went on over a period of several weeks that we were discussing this, we were trying—we had a few things that were wrong with Core-Min-Oil, and we tried to overcome those particular things, and the Shell Company employees, the different ones I have named, were interested in overcoming these particular things that I mentioned.

Q. Can you fix any particular time or place of any one of these conferences, or did this just occur from day to day during this three-month period that you have described, from January through March of 1938?

A. Well, that started in the very beginning when I went to them. The first thing I told them, I think——

Q. You told who?

A. I told Mr. McSwain one of the very first things, the difficulty I had there was something I couldn't understand, why I could put two cores in the oven and one would come out good and the other wouldn't, made out of the same batch.

Q. And you described these other problems to Mr. McSwain at that time?

A. Oh, yes, because we made cores, we poured castings, and we did everything from the very beginning.

Q. This is all before the execution of the contract, Exhibit 5?

(Testimony of Allan B. Ruddie.)

A. Oh, yes. After the castings had been poured, and cores had been made by the hundred, they then asked for a contract.

Q. Did anybody in connection with the Shell Oil Company state, prior to the making of the contract, whether or not Core-Min-Oil was considered to be a commercial product by them?

A. Yes, after they determined the cause of the core softening, then Mr. McSwain talked about marketing it—said it was ready to [49] market, but he asked that we let them make a lot of cores; they wanted a lot of castings to build up a foundation for sales purposes. And they did; they made many castings for that purpose.

Mr. Hackley: Q. All before the signing of the contract?

A. No, this was after the signing of the contract, I would think, but it was during that period, I know.

Q. At the time that you took Core-Min-Oil to the Shell Oil Company in the first instance, state whether or not there was any discussion of what you have described as your problem of emulsifying the asphalt and the solution?

A. Maybe I didn't understand the question.

(The question referred to was read by the reporter.)

A. No, there was nothing at that time.

Mr. Hackley: Q. When was that discussed, if at all?

(Testimony of Allan B. Ruddle.)

A. Well, it was discussed later; after the contract had been signed Mr. McSwain told me that they had determined—that the patent department had advised him that they would have to put it in one package in order that they could control the sale of asphalt; that a patented article could not force the sale of an unpatented article—something to that effect.

Q. That is what Mr. McSwain told you?

A. That is what he told me, yes, and that also by putting it in one package he could get a better price, too. He told us that.

Q. When you first took Core-Min-Oil to the Shell Oil Company, was [50] it in one package or two packages?

A. No, I took it in two packages.

Q. Will you describe just what you mean in that connection?

A. Well, it had two containers: one contained the solution that I described; the other had the asphalt emulsion.

Q. How were the cores made with Core-Min-Oil during this period of work prior to the making of the contract, at the Vulcan Foundry, with reference to procedure of introducing the ingredients, the sand, the solution and the asphalt?

A. They measured out the right amount of sand and they poured the solution—right amount of solution, and then the right amount of—I think the solution was agitated first, and this asphalt

(Testimony of Allan B. Ruddle.)

emulsion was only agitated slightly. It doesn't take much to put that in after you put the solution in.

Q. Those were done in successive steps, were they?

A. Yes, that is the way it was done at the Vulcan Foundry.

Q. Were any attempts made in your presence, or by you in the presence of representatives of the Shell Oil Company, prior to the making of the contract, to introduce the asphalt emulsion and solution as a single step, first mixing the two together, and then mixing the result with the sand?

A. Yes, we did that. I couldn't tell any difference in the result, but we thought that—the reason for putting them in as I described is that it doesn't hurt the solution in the machine to put it thoroughly through the sand, but you can't agitate the asphalt emulsion very much or it will break the emulsion.

Q. Prior to the making of the contract what, if anything, did anybody in connection with the Shell Oil Company say about the fact that you worked from two sources rather than one package, as you describe it? [51]

A. No.

Mr. Hackley: Q. Did you, prior to the making of the contract, describe to the Shell Oil Company any particular advantages of Core-Min-Oil over other core oils?

A. Oh, yes, certainly I did.

Q. Whom did you make those statements to?

(Testimony of Allan B. Ruddie.)

A. I made them to Mr. McSwain, to Mr. Waller, to Mr. Harsch, and to Mr. Spotswood, I would say.

Q. Tell me what you said in that connection to Mr. McSwain.

A. I told Mr. McSwain that the baking time of these cores would save foundry people about 66-2/3 of the time to bake the cores. I also told him that the price would be a great deal less than linseed oil. That was the yardstick to measure foundry practice, as I understood.

Those are the principal things that I told him. The fact that it made better castings with fewer losses; that was our experience.

Mr. Hackley: Q. Do you recall any particular time or place [52] where you made these statements to Mr. McSwain, or was this all over that general period?

A. That is right; I made them many times.

Q. Did you make them in the presence of other people at any time? A. I possibly did.

Q. Who?

A. Well, I enumerated the different members of the Shell Oil Company that we were dealing with at that time, and I know I made it to all of them.

Q. Do I understand you made these same statements at one time or another to all of those individuals you named? A. Yes, I did.

Q. You may have made it to one or more of those together, or just to one separately?

A. That is right.

(Testimony of Allan B. Ruddle.)

Q. Prior to the making of the contract itself—that is, prior to April 8, 1938, the date of Exhibit 5—did you disclose the formula of the solution included in the Core-Min-Oil to Shell Oil Company or any of its employees? A. No, I didn't.

Q. Did you furnish samples of that product to Shell or any of its employees?

A. Yes, we furnished samples to them. In fact, a Mr. Ames, at the Martinez laboratory, told me that he had tried to analyze that sample that I gave him, and that he missed it.

Q. When did you give him the sample?

A. I gave it to him—oh, I don't remember the date, but it was somewhere near the end of '37; I gave it to him for another purpose.

Q. You gave it to him right at the start of all these negotiations, is that right?

A. Yes, that is right.

Q. Did you subsequently give the formula for the solution to the Shell Oil?

A. After the contract was signed, yes.

Q. To whom and when?

A. As I recall, I gave it to Mr. Gratama and Mr. Zublin, and I think Mr. McSwain.

Q. Mr. Gratama and Mr. Zublin of the Shell Development Company? [53]

A. That is right.

Q. And Mr. McSwain of the Shell Oil Company? A. That is right.

(Testimony of Allan B. Ruddle.)

Q. And when did you give it to them?

A. That was just after the contract was signed, possibly the next day.

Q. Did you give to anybody representing the Shell Oil Company the formula for making Core-Min-Oil cores, including the asphalt emulsion but not including the detail of the solution itself, prior to the making of the contract?

A. Oh, yes, I did; I gave him the solution.

Mr. Hackley: Q. Whom did you give that formula to?

A. I gave it to Mr. Spotswood, and I think Mr. Waller and Mr. McSwain.

Q. A moment ago you said that you gave samples of the solution, that is, quantities of the solution itself to these men, is that right?

A. That is right. It had red oil in it at the time. I think it is—I was attempting to put dry mineral oil in it when I gave it to them.

Q. And when the representatives of the Shell Oil Company, as you have described, were making cores at the Vulcan Foundry prior to the making of the contract, did these individuals make up the Core-Min-Oil—that is, make up cores with Core-Min-Oil?

A. Yes, they did.

Q. Where did they get the solution to make up those cores?

A. I made the solution up at my apartment here in San Francisco and took it in a can up to Martinez.

(Testimony of Allan B. Ruddlee.)

Q. And gave it to whom?

A. Gave it to Mr. Spotswood. [54]

Q. Did you take any over to the Vulcan Foundry during this period?

A. It seems to me that it was later, but I did take some to the Vulcan Foundry.

Q. What formula did you give to the Shell Oil Company prior to the making of the contract for making a suitable core with Core-Min-Oil?

A. You mean the sand and the solution and the asphalt?

Q. Yes.

A. The same formula that I related here this morning.

Q. Will you repeat it, please, as far as you gave it to them, now, prior to the making of the contract?

A. 1750 cc's of dry sand, 80 cc's of solution, and 50 cc's of asphalt emulsion.

Q. Did you give them mixing instructions, the procedure of mixing the sand and the solution and the asphalt? A. I did.

Q. And what were those?

A. Just the same as I have related here.

Q. Will you repeat it again?

A. 1750 cc's—

Q. I mean the mixing instructions. I wanted to know if you described how to mix the sand and the other ingredients.

A. Yes, I told them to measure the sand first,

(Testimony of Allan B. Ruddie.)

and then put the solution in first and mix it thoroughly, and then add the asphalt emulsion and thoroughly mix.

Q. And that gives a finished core sand, does it?

A. That is the finished core sand.

Q. What is the next step in the making of the core after that is completed?

A. Then it is put into the core box, and some are cooked in the core boxes—the cope—and others are taken out of the core boxes and put on a flat plate that is put into the oven, and baked.

Q. Both procedures were offered with Core-Min-Oil, were they?

A. Oh, yes, yes. In Macauley they do it entirely—they take it out of the cope, but in the Vulcan Foundry they get the lower half, [55] I believe—they form the top and put on top of it, and then take the top off, and it is baked with one-half.

Q. You referred to the cope. What do you mean by that?

A. That is the top of the core box, and I think the lower one is called the drag.

Q. Now, if I understand your testimony, you described to Shell, or its representatives—Mr. Spotswood, Mr. Waller, Mr. McSwain—prior to the making of the contract, the formula for making Core-Min-Oil, and did not tell them the exact formula of the solution used in Core-Min-Oil; is that correct?

A. That is right.

Q. You described to them, and they followed

(Testimony of Allan B. Ruddie.)

your description and made cores by this procedure you have described, prior to the making of the contract; is that true? A. That is right.

Q. Then immediately after the contract was signed you disclosed to the Shell Oil Company the exact formula for the solution; is that correct?

A. That is right.

Q. Other than the disclosure which you have described having made prior to the making of the contract, did you describe to Shell any other information, or give to Shell any other information which you had learned in the making of cores with Core-Min-Oil?

A. In fact, I described all I had learned in the way of making cores,—how the asphalt could be used in this material. That plays an important part, because it makes the material friable, so that the cores would pour out.

Q. Did you describe to them everything that you knew about core making prior to the making of the contract, except the formula of the solution itself?

A. Everything that I knew, yes.

Q. Did you impose any condition upon the representatives of the Shell Oil Company, or the Shell Oil Company, at the time you made the disclosures before the making of the contract? [56]

A. I certainly did.

Q. Describe what you did in that connection, to whom you said it, and what you said.

You understand, this is before the making of the contract, Mr. Ruddie?

(Testimony of Allan B. Ruddie.)

A. Yes. We were afraid if we told our ideas to the Shell Oil Company, that they would not make a contract with us, but would use those ideas to develop something for themselves. So when we told them about our idea of using asphalt in the manufacture of Core-Min-Oil, why, we told them we would give it to them with the understanding, of course, that we would have to work out a deal with the Shell Oil Company. [57]

Q. Would you fix the time and place of that, Mr. Ruddie; whom it was told you, and if there was anyone else present describe who it was?

A. Well, that was with Mr. McSwain, and I would say that was just prior to our beginning of any work, showing them anything.

Q. What did Mr. McSwain say to you about your statements?

A. He said it would be treated as I had asked that it be treated: that they wouldn't use it unless we entered into some kind of an agreement. [58]

Q. At the time we took an adjournment, Mr. Ruddie, you were testifying that you had made the disclosures of the Core-Min-Oil product, the method of preparing cores with Core-Min-Oil, to the representatives of the Shell Oil Company; you named Mr. McSwain, Mr. Waller, and Mr. Spotswood, I think, among others, and this was prior to the making of the contract; and that at the time you stated to them that you expected them to hold these disclosures in confidence and not utilize them except

(Testimony of Allan B. Ruddie.)

under an agreement with you. Did any of these men make any response to your request in that regard, and if so, what was it?

A. Yes, each and every one of them promised to keep this as a secret and use it as a secret pending the entering into a contract.

Q. Did you have any discussion with anybody in connection with the Shell Oil Company as to whether or not representatives of Shell whom you talked to had any knowledge prior to your disclosure of the subject to them that asphalt or asphalt emulsions were useful in core oils?

A. Yes; I talked to Mr. McSwain, and in fact, Mr. Waller, Mr. Spotswood, and in fact, each member that I had anything to do with, with the Shell, and they all said Shell Oil Company had never done anything on core oil; it was a subject they knew nothing about.

Q. Did any of them state whether or not they or Shell Oil Company, to their knowledge, knew of it prior to your disclosure of the fact to them that asphalt or asphalt emulsions were useful in core oils?

A. No; they said it was an absolute new idea to them. [59]

Q. And when did you first make such a statement as that to Mr. McSwain, if he was one of those you spoke to?

A. But I first talked to Mr. McSwain.

Q. In your very first conference?

(Testimony of Allan B. Ruddle.)

A. In my very first conversation with Mr. McSwain.

Q. At that time, do I understand from what you said, that Mr. McSwain said it was all new to him?

A. Yes, he said this was a new idea, so far as he was concerned; he never heard of such a thing.

Q. Do I understand from your testimony that Mr. Waller and Mr. Spotswood similarly expressed themselves? A. Yes, they did.

Q. At the time of your discussions prior to the making of the contract with the Shell Oil Company about the subject of Core-Min-Oil, did any representative or representatives of Shell discuss with you the volume of sales which you might expect if you were to make a deal with them?

A. Yes; Mr. McSwain did.

Q. And when was that?

A. Well, that was during the early part of our talks on this subject. We discussed the size of the market. I had a letter that we had—that Lydell Peck had received from The Foundry Magazine. In this letter it gave the gallonage of linseed oil that was sold during the year over a period of several years, and when we talked to Mr. McSwain we discussed that possibly this product was good enough to take that [60] linseed market.

Mr. Hackley: Q. You referred to a letter. For the purpose of illustrating your testimony, I ask you if this is the letter that you referred to (showing)?

A. Yes, that is the letter.

(Testimony of Allan B. Ruddle.)

Q. Mr. Ruddle, you are referring to a letter entitled "The Foundry," dated November 26, 1937, Cleveland, Ohio and signed by "The Foundry," apparently a magazine title, G. A. Pope, assistant advertising manager; is that correct?

A. Yes, that is right.

Q. I understand from your testimony that that letter was shown to Mr. McSwain. A. It was.

Q. In one of these early conferences with him?

A. It was.

Mr. Hackley: For the purpose of illustrating the witness' testimony, I offer as Plaintiffs' Exhibit 6 the letter identified by the witness.

Mr. Aurich: I have several objections to that letter, your Honor. This is a letter on the letter-head of The Foundry, dated November 26, 1937, and at the conclusion appears a signature of apparently a man by the name of G. A. Pope. The letter has not been sufficiently authenticated, or at all authenticated, and a mere reading of the letter will show that it is full and replete with hearsay statements. I object to it as being hearsay, no foundation being laid.

Mr. Hackley: Your Honor, I think the objection goes to the weight rather than the substance. I am merely offering it to illustrate the witness' testimony, not for its contents.

The Court: The objection will be sustained. [61]

Mr. Hackley: May I offer the letter, then, for identification, your Honor?

(Testimony of Allan B. Ruddle.)

The Court: Let it be marked.

(The letter referred to was marked "Plaintiffs' Exhibit No. 6 for identification.")

Mr. Hackley: Q. Will you continue now with your discussion with Mr. McSwain about the volume of sales of Core-Min-Oil?

A. Well, in discussing with Mr. McSwain the amount of sales that we discussed we agreed that the sales—that is, Mr. McSwain and Mr. Peck and myself, and I think Mr. Waller and several others in the Shell Oil Company; I don't know their names. But Mr. McSwain said they had looked into the market and that the market was in the neighborhood of some 23,000,000 gallons of linseed oil.

Mr. Aurich: I wanted to have these conversations fixed, without my continuing to have to object to them all the time. I don't know when these things are supposed to have taken place. It could have been in July, 1938.

The Court: The record will disclose that there are very few conversations developed for which the proper foundation has been laid. Counsel is entitled to that under the rule. Try to observe it. Proceed with this case.

Mr. Hackley: Q. Mr. Ruddle, will you tell us when and where this conversation took place, particularly what parties were present, if anyone besides yourself and Mr. McSwain?

A. Mr. McSwain and Mr. Waller, I know, were present, and that was just prior—just after our first

(Testimony of Allan B. Ruddie.)

meeting—within the next few weeks, I would say. The first meeting was the end of 1937 or the first part of 1938. [62]

Q. Would you fix the conversation you are now referring to as being in the month of January, 1938, or the month of February, 1938?

A. Well, it is possible it was in the first part of February, but I wouldn't attempt to fix the date exactly. It was during our first negotiations with the Shell Oil Company.

Q. Where was this conversation? Where did it take place?

A. In Mr. McSwain's office.

Q. In the Shell Oil Building in San Francisco?

A. In the Shell Oil Building in San Francisco.

Q. Now will you continue with the discussion of that subject at that meeting?

A. We were trying to get Mr. McSwain to—we were trying to interest the Shell Oil Company in this, and we were discussing it generally with them. Those discussions went on for several weeks, and in these discussions these conversations took place. Does that answer your question?

Q. Did you have a particular conversation with Mr. McSwain at which time you discussed this question of sales volume? You said Mr. McSwain represented to you certain things about the volume of core oil being consumed, and things of that sort.

A. Yes; that was during the time we were negotiating a contract.

Q. Was this prior to April 8, 1938?

(Testimony of Allan B. Ruddie.)

A. Yes, that was prior to April 8. The time——

Q. Can you state approximately how long prior?

A. Well, the time that we were negotiating the contract, after several weeks; it was during that time; we were trying to get the Shell Oil to put a minimum gallonage in there, a guarantee of taking so much, and they objected to that.

Mr. Aurich: I will object to any questions about minimum gallonage, or any discussion about the negotiations for the contract. The contract speaks for itself in that regard. [63]

Mr. Hackley: I agree in that respect, your Honor. I did not ask the witness to give that testimony, and it may go out as far as I am concerned.

Q. Mr. Ruddie, I want you not to direct yourself to the contract and things relating to it. Did Mr. McSwain discuss with you the question of gallonage which you might expect to enjoy?

A. Yes, he did.

Q. If you made a contract with the Shell Oil Company? A. Yes, he did.

Q. Will you tell us when that discussion took place as closely as to date as you can?

A. It was probably the first part of April, 1938, —maybe the latter part of March, 1938—he submitted some figures, and on it it had several different prices, and on that list there was—and I think it ran from one million to ten million gallons. That was along when we were talking about the amount that the Shell should sell.

(Testimony of Allan B. Ruddie.)

Q. Was this discussion before or after April 8, 1938?

A. Oh, that was prior.

Q. I show you a memorandum which is Exhibit 4 to the deposition of J. F. McSwain, and ask you if you can identify that (handing paper to witness)?

A. Yes, that is the memorandum I referred to.

Q. That memorandum was handed to you by Mr. McSwain, was it?

A. That is right.

Q. Was it prepared in your presence?

A. No; he brought it with him over to Mr. Peck's office at that time.

Q. This was prior to April 8, 1938?

A. Oh, yes, that was prior to April 8.

Q. Who was present when this memorandum was given to you?

A. Mr. Lydell Peck was present, and James F. Peck, his father.

Q. Anyone else?

A. No. Mr. McSwain and myself, I think, were [64] there.

Q. No one else from the Shell Company, as far as you know?

A. No. No, I am sure there weren't.

Q. It was at Mr. J. F. Peck's office?

A. That is right.

Q. Where was that office located?

A. In 814 Crocker Building.

Q. San Francisco?

A. San Francisco.

Mr. Hackley: I offer as Plaintiffs' Exhibit 7

(Testimony of Allan B. Ruddle.)

the memorandum identified by the witness, and which is Plaintiffs' Exhibit 4 to the McSwain deposition of December 3, 1940. This is a photostatic copy of the original.

I assume you have no objection to the form, Mr. Aurich?

Mr. Aurich: I have no objection to the substitution of a photostatic copy. However, if the Court please, I would like to ask one or two questions concerning this document, to lay the foundation for my objection. May I proceed, your Honor?

The Court: You may.

Mr. Aurich: Q. With respect to the time the contract was entered into, Mr. Ruddle, how long prior thereto did Mr. McSwain hand you this document that has been identified?

A. It was prior; I don't know how long prior.

Q. But that was during the negotiations for the contract, was it?

A. Yes, I would say it was.

Q. And that was because there was some controversy between you and Shell as to whether or not the contract should contain a provision for the payment of minimum royalties?

A. That is right.

Mr. Aurich: I object to the document on the ground that is part of the negotiation leading up to the contract and it merged therein.

Mr. Hackley: If your Honor please, this document is not offered in any way in connection with

(Testimony of Allan B. Ruddle.)

that contract or any of its [65] terms. This is merely offered to set a measure for the question of damage in the non-performance of this agreement. The contract has no provision for any minimum royalty, for minimum gallonage; it merely provides that the Shell Oil Company shall diligently and faithfully pursue the contract by the sale of the product. In that connection we have the burden of showing, as best we can, what might have been performance under that contract by the Shell Oil Company. One of the methods of proving that is to show the representations that were made, not as part of the contract, but by the Shell Oil Company's representatives, as to the potential market for the product, the amount of product which they felt they could sell, and that is the only purpose for which this document is offered.

The Court: But that document, as far as the testimony goes, has to do with the contemplated clause in the contract taking care of gallonage. It was in the contract.

Mr. Hackley: There is no such clause in the contract, your Honor.

The Court: I will sustain the objection.

Mr. Hackley: Q. Mr. Ruddle, in your testimony you stated that the contract of April 8, 1938, Exhibit 5 here, was entered into on that date. Now, will you describe briefly, so far as you know, what was done during the period of the option term of that contract, which in the contract is set as a period

(Testimony of Allan B. Ruddle.)

of six months, commencing April 8, 1938—and by “done,” I mean done by Shell Oil Company, in reference to the Core-Min-Oil subject?

Mr. Aurich: You mean so far as he may have personal knowledge, Mr. Hackley?

Mr. Hackley: So far as he knows, yes.

A. Well, the Shell Oil Company made many tests and did a lot of laboratory work at Martinez, and also at the Vulcan Foundry. I [66] witnessed a great deal of that work for the first six months, and I went with Mr. Waller and witnessed these tests.

Q. What were the nature of the tests? Did you follow them to observe them?

A. Yes; they made cores—they made cores in ovens at the Vulcan Foundry. Manuel at first—the Vulcan foundry man—made the cores; they were baked in the—after they determined the CO₂ gas bothered the cores, and they put hoods over them, we baked many of those cores in the Vulcan Foundry ovens.

Q. What type of ovens do they have at the Vulcan Foundry?

A. They have open fire ovens, where the flame comes in contact with the cores.

Q. What type of ovens do they have at the Macauley Foundry?

A. They have the same there, open fire ovens.

Q. Do they have any indirect ovens at either of those places? A. No, they do not.

(Testimony of Allan B. Ruddle.)

Q. Other than the electric oven you referred to this morning, that was brought to Vulcan by Mr. Spotswood? A. Yes, that is right.

Q. What were these cores made with after the contract, now, was executed? Were they made with Core-Min-Oil?

A. Yes; at least the early ones were. But I understood they were trying to put—that is, Shell was trying to get the solution and the asphalt in one container.

Q. Just a minute. What do you mean by “understood”?

A. Well, McSwain had told me that they wanted to get the solution and the asphalt in one container. [67]

Q. Mr. Ruddle, I asked you earlier, and I will ask you again; Whenever you mention a conversation, please tell us who was present, all of the parties that were present, where it occurred, when it occurred as best you can fix the date, and then go into what took place.

A. Well, that would be impossible, because that happened four years ago, and I couldn't testify to every conversation.

Q. As closely as you can, from your recollection. You have just testified that sometime after April 8, 1938, you had a conversation with Mr. McSwain about the subject of putting the ingredients of Core-Min-Oil in a single carton, package or container, or whatever it was. When did that occur with reference to the making of the contract?

(Testimony of Allan B. Ruddie.)

Mr. Aurich: Mr. Hackley, I may help you a little bit here. When I keep asking for these dates, I appreciate the fact that those conversations between the plaintiffs and the representatives of the defendant occurred over a period of time, and it would be practically impossible to fix a specific day. It would satisfy my purposes if he would just fix a period of time between which it occurred, so that we know whether it is January, 1938, or December, 1938.

Mr. Hackley: You understand this group of questions are, at the outset, limited to the period of the option of the contract, which is six months.

Mr. Aurich: You mean between April and October, 1938?

Mr. Hackley: Yes.

Mr. Aurich: That is satisfactory.

Mr. Hackley: I tried to limit it to that. [68]

Mr. Aurich: I have no objection to that, if that is the period of time within which the conversations took place.

Mr. Hackley: Q. Was this in the early part or latter part of that period?

A. This was in the early part of—I would say possibly two months after April 8th.

Q. Sometime in May or June, 1938?

A. Yes, that is right; possibly about that time.

Q. Your conversation was with Mr. McSwain, was it?

A. Yes, Mr. McSwain; he was the one that han-

(Testimony of Allan B. Ruddle.)

dled all the business end of this talk—these negotiations.

Q. I am referring to just the first conversations you had where Mr. McSwain, as you stated, was talking to you about Shell's attempts to make a single package article out of Core-Min-Oil.

A. Yes, he had told me——

Q. Where did that occur, before you tell us what he said?

A. I would say in Mr. McSwain's office in the Shell Building.

Q. Was anyone else present?

A. Now, there might have been someone else there, but I don't recall anybody else being there.

Q. Mr. Ruddle, I don't want to lead you; you correct me on this: It is true that you had innumerable conversations with Mr. McSwain; is that true?

A. Hundreds of them; I was there every day, almost.

Q. Over the period of the option?

A. The entire six months I was there several times a week; sometimes all day with him; sometimes we would go to Martinez; sometimes we would go to the Vulcan Foundry; and he even came to my home in the evening.

Q. And on these occasions there were sometimes others of these men you have named, present?

A. That is true.

Q. And sometimes they were not?

(Testimony of Allan B. Ruddie.)

A. Yes; a great deal of the time Ray Harsch was there. [69]

Q. Is it possible for you at this time to isolate each one of these conversations and state exactly who was present and whether it happened in the Vulcan Foundry, or Martinez, or Mr. McSwain's office in San Francisco?

A. No, I couldn't do that.

Q. You can't limit it to that area?

A. I do know that I talked to Mr. McSwain; who was with us I wouldn't be able to tell you.

Mr. Hackley: Does that help you any, Mr. Aurich?

Mr. Aurich: Yes. I am perfectly agreeable in this matter, Mr. Hackley; I know that both parties are laboring under the same difficulty. All I want is the approximate period of time during which these conversations are supposed to have occurred, according to the witness.

Mr. Hackley: I want to isolate these under the rules as closely as I can for you.

Q. Now go ahead with what you were telling us about your discussion—or if it was more than one discussion, your discussions—with Mr. McSwain on the question which you said was raised by him about putting Core-Min-Oil in a single container.

A. Well, he told us that if he could put the Core-Min-Oil in the one container by emulsifying both products, the solution and the asphalt emulsion,

(Testimony of Allan B. Ruddle.)

that he would be able to control the sale of asphalt, and that he could get a better price for it.

Q. Did he tell you about anything that was being done, or did you observe anything being done, by Shell, to attempt to accomplish that end?

A. Yes; they were trying to do that in Martinez at that time: I think Mr. Warren was the name of the man working for the Shell Oil Company that was working on that at that time.

Q. Were you ever advised whether or not Shell was able to make a single package item out of Core-Min-Oil?

A. At that time [70] they told us that they were unable to make it.

Q. "At that time"—that was when?

A. That was during this period of six months that you referred to.

Q. The option period of the contract?

A. That is right.

Q. When you took Core-Min-Oil to the Shell Oil Company in the first instance, did you represent the product to them to be a single package, or two package article? A. Two package.

Q. Did you discuss with them prior to making the contract anything about making a single package article? A. I did not.

Q. Did they ever bring up that question?

A. No, no, not at that time.

Q. Anyone in connection with Shell?

(Testimony of Allan B. Ruddie.)

A. Not at that time, no.

Q. When was the question first raised?

A. I tried to place it a minute ago, about probably two months after the contract was signed.

Q. That was the first time it was raised by anybody in connection with Shell?

A. That is right.

Q. Did you have any further discussions with Mr. McSwain during that period of the option with reference to what Shell would do with reference to selling Core-Min-Oil in the event they were unable to put it in the single package?

A. He always told us they would sell it in two packages.

Q. If they couldn't sell it in one?

A. Yes. He discussed the method of how he would sell it in two packages. He said he would probably have to license a foundry to use a patented solution, but he said the objection to that was that the foundry could buy the asphalt emulsion from other oil companies, and then he would have to put all the profit on it from the patented solution.

Q. When you refer to "the patented solution," what do you mean?

A. The combination of solution and the—the sodium silicate [71] solution.

Q. At the time you are now referring to, had any patents issued on Core-Min-Oil or any of its constituents?

(Testimony of Allan B. Ruddle.)

A. No, they had not; there were just applications filed.

Q. When you speak of the patented solution are you referring to the patented subject matter of your two patents, Plaintiff's Exhibits 1 and 2?

A. Yes, that is right.

Q. When you refer to the patented solution you mean if and when they were patented, is that correct?

A. Yes, that is right.

Q. Mr. Ruddle, outside of further tests of Core-Min-Oil that you have described, and attempts by Shell to work out a method of placing Core-Min-Oil in a single container, which I believe you described—correct me if I am wrong—as an emulsifying solution and Core-Min-Oil—is that correct?

A. That is right.

Q. Did you observe, or were you informed by Shell of any other activity that was being done during the option period, relating to Core-Min-Oil?

A. You mean other than trying to put it in one package?

Q. In making the tests, as you have described, of the product itself.

A. Yes; they were trying to get information for patent purposes, to patent the fact that CO₂ gas was the cause of the core softening, and also they were trying to get a range of the solution—that is, the amount of asphalt emulsion—the least amount of asphalt emulsion and the most of asphalt emul-

(Testimony of Allan B. Ruddie.)

sion that could be used in this core, as well as the measure of solution that was used.

Q. Who was doing that work, if you know?

A. Well, it was being done at the Martinez laboratory by Mr. Spotswood, I think.

Q. Did you at any time turn over to the Shell Oil Company copies of your applications for patent resulting in patents, Exhibits 1 [72] and 2, or give them access to your patent office files of those patents?

A. Yes; after the contract was signed we turned over the patent applications for them to prosecute.

Q. That was in line with your agreement, was it?

A. Yes, that was it.

Q. Those were the applications for patent resulting in patents, Exhibits 1 and 2, is that correct?

A. That is right.

Q. And did you turn over to them for prosecution the application which you referred to as an abandoned application this morning?

A. Yes, I did.

Q. During this period between April 8, 1938, and the end of the option period, October 8, 1938, did anything else come up on the question of patent protection relating to your product, or anything in connection with it?

A. Well, there was an application for patent that was applied for in the name of Spotswood and Ruddie. Is that the one you refer to?

Mr. Hackley: Q. That was the application in

(Testimony of Allan B. Ruddle.)

which you and Mr. Spotswood were joint inventors?

A. That is right.

Q. What, if you remember, was the general subject of that application?

A. Well, it was an application for protection on this CO₂ gas, and also the measurements of quantity used, as I recall.

Q. I show you a copy of patent entitled "Ruddle and Spotswood Application, Patent No. 2,214,349, issued September 10, 1940," and ask you if you can identify that in connection with your testimony?

A. Yes, that is the patent I had in mind.

Q. That is the patent that issued on the application you are referring to?

A. That is right. [73]

Q. Was the application for this patent prepared by your attorneys or Shell's attorneys?

A. By Shell Oil Company's attorney—Shell Development Company's attorney.

Q. Was the application for patent prosecuted to final issuance by the Shell Company's attorneys?

A. I understand that they returned it to us—returned it to me, and I, in turn, turned it over to Mr. Townsend and Hackley, and they completed it.

Q. You turned it over to my office and we completed the prosecution? A. That is right.

Q. And eventually on September 10, 1940, this patent issued that you have identified here?

A. That is right.

(Testimony of Allan B. Ruddie.)

Mr. Hackley: To illustrate the witness' testimony, I ask that a copy of this patent be received as Plaintiffs' Exhibit 7, the patent being number 2,214,349—as No. 8.

I note in making this offer, your Honor, that I overlooked offering as Paintiffs' Exhibit for Identification, the royalty memorandum of Mr. McSwain, the objection to the offer of which was sustained, but I merely offer it now for identification.

The Court: Let it be marked.

Mr. Hackley: And ask that it be marked Exhibit 7 for identification, and that the patent be marked Exhibit 8, so that our [74] continuity is preserved.

(The royalty memorandum referred to was marked "Plaintiffs' Exhibit No. 7 for Identification.")

(The Patent No. 2,214,349 was marked "Plaintiffs' Exhibit No. 8.")

Mr. Hackley: Q. Did the Defendant Shell Oil Company exercise the option contained in the contract, Exhibit 5?

A. They did.

Q. On or before October 8, 1938?

A. They did.

Q. On or before October 8?

A. No, it was—they asked for an extension—ten-day extension; and in fact, they asked for three ten-day extensions, which we gave them, and just prior to the last extension, before it ran out, they wrote

(Testimony of Allan B. Ruddie.)

us a letter saying that they were going to go ahead under the contract.

Q. Did you or your representatives receive a letter notifying you of the exercise of the option of the contract and election to operate under it?

Mr. Aurich: I will admit that the letter was written, and I will admit—although I have no knowledge of it—that it was received, and that the option was exercised and the contract was [75] taken up.

Q. You received this letter (showing)?

A. Yes, I received that letter.

Mr. Hackley: I ask that the letter identified by the witness, dated November 2, 1938, written by Bernard J. Gratama, be received as Plaintiffs' Exhibit 9.

(The letter referred to was marked "Plaintiffs' Exhibit No. 9.")

Mr. Hackley: Q. After the option on the contract was exercised and the contract of April 8, 1938, went into effect, what next transpired in reference to performance of that contract, if anything?

A. Well, I called upon Mr. McSwain to ask him when he was going to start—

Q. When did you call on him?

A. Immediately after it was exercised.

Q. Right after November 2, 1938?

A. Probably the next day.

Q. Right after November 2, 1938?

(Testimony of Allan B. Ruddle.)

A. Yes, that is right; and asked Mr. McSwain when the Shell Oil Company——

Q. Just a minute. This was at his office, was it?

A. At his office, yes.

Q. Was anyone else present?

A. I don't recall that anyone else was there, but I do know that I went to Mr. McSwain the next day, possibly, after I received that—possibly that day—to find out when they would start to sell this product.

Q. Did Mr. McSwain make any statements to you?

A. Yes; he said they had done a lot of work getting ready to sell it, and they would probably put it on the market within the next week, or next two weeks, or next ten days. Each time I went there—and I went there every day or two after that to find out when they would start to market this——

Q. How long did that continue, that you went to Mr. McSwain's [76] office?

A. Well, I went to Mr. McSwain's office several times a week, and he was—he would always tell me that they were getting along fine on emulsifying that product; they would soon have it in one package. They were going to start to sell it; they were going to have their headquarters in St. Louis, Missouri, and he hoped to head it, and it would certainly be within the next ten days or the next week, whatever—it was always some near future that we were

(Testimony of Allan B. Ruddle.)

going to start selling it—they were going to start selling it, the Shell Company. That went on until—I don't remember the date of it, but I went there one day and he said to me, "It doesn't look very good for Core-Min-Oil," he said,——

Q. When was this, Mr. Ruddle?

A. Well, this was just prior to a letter that we received from Mr. McLaren. He said, "It doesn't look"—I mean Mr. McSwain said it this way:——

Q. Can you give me approximately the month and year?

A. If you will let me refer to that letter of Mr. McLaren's there I could.

Q. It was just before the letter that you are referring to?

A. Yes; because he told me that we were going to get a letter from McLaren.

Q. I show you a letter dated July 26, 1939, signed "Shell Oil, by L. G. McLaren." Is that the letter you refer to?

A. This is the letter I refer to.

Q. Just prior to this letter you had a conversation with Mr. McSwain?

A. Yes; it might have been a week or ten days prior to that letter. He told me it didn't look very well for Core-Min-Oil; that they had been able to do the same thing with sodium silicate, and that they had—anyway, had perfected another product out of albino asphalt and something they had made

(Testimony of Allan B. Ruddie.)

out of linseed oil—whether it was oil they put in, linseed, I [77] don't know; but he said that they would use some kind of a solution that contained linseed oil with this product albino asphalt, and they had been able to accomplish—and that had all the qualities of linseed oil, and it had the drying time, the baking time of the product that we had here, and for that reason they were going to return our product.

Q. What did you say to Mr. McSwain at that time?

A. Well, I objected to it. And he said that, well, "We would have to sell this product of ours and let you share in it, but we cannot; we are advised by our patent department that we cannot get a patent on it, and that if we sold it, all we would be doing would be to open up the market for all the emulsifying asphalt men in the Middle West." He said, "They would be the ones that would reap the market." And he said to me, "I want to know what you people would want to do about this." So I told him that I would talk to Mr. Peck, and Lydell Peck, and I would give him an answer as to what we would expect them to do; that I certainly felt that they should market our product, and he had always promised that they would. And then I went to Mr. Peck's office and talked to Lydell and to his father, Mr. James F. Peck, and that evening I called Mr. McSwain at his home and told him that we had—we were so shocked over being told that

(Testimony of Allan B. Ruddie.)

after all this time, that we were to receive nothing out of this sale of Core-Min-Oil, and asked to take ours back while they took the market, I said we were going to refuse to do it. And I think we went to your office maybe the next day, and asked you to prepare a letter in answer to a letter that we received. When we received Mr. McLaren's letter—I am a little ahead of my story—we asked you to prepare an answer to Mr. McLaren's letter when we had received notice from him that they were going to cancel our contract. [78]

Q. Just a moment. At that point, Mr. Ruddie, are you again referring to the letter of July 26, 1939, signed by Mr. McLaren?

A. Yes, that is the letter I referred to.

Q. That letter was received at or about the date that appears on it?

A. Yes, that is the letter I referred to, I am sure.

Mr. Hackley: I offer as Plaintiffs' Exhibit 10 the letter dated July 26, 1939, signed "Shell Oil Company, Incorporated, by L. G. McLaren, Vice-President."

(The letter referred to was marked "Plaintiffs' Exhibit No. 10.")

Mr. Hackley: Q. Do I understand, then, that a reply to the letter, Exhibit 10, was prepared by your attorneys at your request?

A. That is right.

(Testimony of Allan B. Ruddie.)

Q. And did you reply, then, to Mr. McLaren's letter, Exhibit 10? A. Yes, we did.

Mr. Hackley: I show you the original of the letter which you [79] have identified and ask you if you can identify the original, particularly the signatures on it?

A. Yes, that is my signature, and the signature of Lydell Peck.

Q. That letter was sent by you to the Shell Oil Company? A. That is right.

Q. Prior to August 1, 1939?

A. Yes. It is in answer to that one of July 26.

Mr. Hackley: I offer as Plaintiffs' Exhibit 11 the letter identified by the witness, addressed by the witness and Lydell Peck to the Shell Oil Company, attention L. G. McLaren, noted as being in reply to letter Exhibit 10.

(The letter referred to was marked "Plaintiffs' Exhibit No. 11.")

Mr. Hackley: Q. Did you receive any response from the Shell Oil Company, Exhibit 11, or a supplement to their letter, Exhibit 10? And in that connection I show you a letter from the Shell Oil signed by Mr. McLaren, addressed to yourself, dated August 18, 1939?

A. Yes, we received this letter. This came attached to some reports that the Shell Oil Company had made on the work they had done on Core-Min-Oil and other oils.

Mr. Hackley: I ask that the letter identified by

(Testimony of Allan B. Ruddle.)

the witness dated August 18, 1939, signed "L. G. McLaren, for Shell Oil Company," be received as Plaintiffs' Exhibit 12.

(The letter referred to was marked "Plaintiffs' Exhibit No. 12.")

Mr. Hackley: I might note for the record in that connection that Plaintiffs' Exhibit 9 is Exhibit C to the complaint in this action; Plaintiffs' Exhibit 10 is Exhibit D to the complaint; [80] Plaintiffs' Exhibit 11 is Exhibit E to the complaint; and Plaintiffs' Exhibit 12 is Exhibit F to the complaint in this cause.

Q. You referred to the fact that there were enclosed——

Mr. Aurich: I haven't carefully compared Plaintiffs' Exhibit 12 with the alleged corresponding exhibit attached to the bill of complaint, but I do know——

The Court: Subject to any corrections you wish to make.

Mr. Aurich: I don't think it is quite an accurate copy.

Mr. Hackley: If there were typographical errors in the copy annexed to the complaint, the original which we are now offering——

The Court: Subject to correction by counsel.

Mr. Hackley: We are offering here the original, your Honor.

Q. Mr. Ruddle, you mentioned the fact that there were annexed to the letter, Exhibit 12, the

(Testimony of Allan B. Ruddie.)

series of reports which are referred to in Exhibit 12.

A. That is right.

Q. I ask you if, among those reports, were Plaintiffs' Exhibits 3 and 4 which you have previously identified?

A. Yes; those are the only ones that we had received up until the time of receiving this.

Q. So you received duplicates as part of Exhibit 12 of Plaintiffs' Exhibits 3 and 4?

A. Yes, that is right.

Mr. Aurich: Mr. Hackley, if you want to offer the reports that are attached to the bill of complaint, I will waive authentication and verification by this witness.

Mr. Hackley: You will stipulate these are the reports referred to in the letter?

Mr. Aurich: If you are offering the signed reports, yes, I will.

Mr. Hackley: Yes, I am offering signed copies only. They, however, appear to be mimeographed signatures of the original [81] signatures.

Mr. Aurich: They are copies of those attached to your complaint.

Mr. Hackley: I therefore offer as Plaintiffs' Exhibit 13, Shell Oil Company's Special Report No. R168, dated June 14, 1938, which is Exhibit F-3 to the complaint. I may state for the record that Exhibits F-1 and F-2 to the complaint are Plaintiffs' Exhibits 3 and 4 respectively, offered previously in this proceeding.

(Testimony of Allan B. Ruddle.)

(The report referred to was marked "Plaintiffs' Exhibit No. 13.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 14, Shell Oil Company Martinez Refinery Report R175, dated July 26, 1938, this being Exhibit F-4 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 14.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 15 Shell Oil Company Martinez Refinery Report No. TAC226, dated June 30, 1938, this being Exhibit F-5 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 15.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 16 Shell Oil Company Martinez Refinery Report TAC227, dated June 30, 1938, Exhibit F-6 to the complaint in this action.

(The report referred to was marked "Plaintiffs' Exhibit No. 16.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 17 Shell Oil Company Martinez Refinery Report TAC228, dated July 1, 1938, Exhibit F-7 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 17.") [82]

Mr. Hackley: I offer as Plaintiffs' Exhibit 18, Shell Oil Company Martinez Refinery Report

(Testimony of Allan B. Ruddie.)

TAC290, dated August 29, 1938, being Exhibit F-8 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 18.")

Mr. Hackley: I offer as Plaintiffs' Exhibit No. 19, Shell Oil Company Martinez Refinery Report TAC367, dated October 27, 1938, Exhibit F-9 to the complaint.

(The report referred to was marked Plaintiffs' Exhibit No. 19.)

Mr. Hackley: I offer as Plaintiffs' Exhibit 20, Shell Oil Company Martinez Refinery Report TAC No. 472, dated December 15, 1938, Exhibit F-10 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 20.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 21, Shell Oil Company, Incorporated, Martinez Refinery Report TAC 561, dated March 23, 1939, Exhibit F-11 to the complaint.

(The report referred to was marked "Plaintiffs' Exhibit No. 21.")

Mr. Hackley: I offer as Plaintiffs' Exhibit 22, Shell Oil Company Martinez Refinery Report TAC 462, dated November 30, 1938, being Exhibit F-12 to the complaint in this action.

(The report referred to was marked "Plaintiffs' Exhibit No. 22.") [83]

(Testimony of Allan B. Ruddle.)

Mr. Hackley: And finally, I offer, as the last of this group of exhibits referred to in Exhibit 12, as Plaintiffs' Exhibit 23 a report dated August 7, 1939, signed W. H. Spiri and E. H. Spotswood entitled "Preparation and Testing Mixed Core Oils containing Bituminous Emulsions and Sodium Silicate;" this is Exhibit F-13 to the complaint.

(The report referred to was marked Plaintiffs' Exhibit No. 23 in evidence.)

Mr. Hackley: You spoke of the fact, Mr. Ruddle, that you received the first of this group of reports, Plaintiffs' Exhibits 3 and 4, prior to the receipt of the notice of July 26, 1939.

A. That is right.

Q. Did you receive copies of any of the reports Exhibits 13 to 23 inclusive prior to the receipt of Exhibit 12, the letter of transmittal of those reports?

A. No, we had not.

Q. Had you ever seen those reports?

A. No, I never had.

Q. Had you *been* any access to them at all?

A. No, we had not.

Q. Had any reference ever been made to them in any conversation with you?

A. No reference to the report; I was told orally part of what was going on.

Q. You did receive orally some of the information contained in some of the reports, if I understand you?

A. Oh, yes, Mr. McSwain would tell me gen-

(Testimony of Allan B. Ruddie.)

erally what they were trying to do, but not in detail, because I don't think he knew.

Q. Did you reply to the letter Exhibit 12 in which these reports Exhibits 3, 4 and 13 to 23 inclusive were received?

A. I think we asked your office to reply.

Q. Did you prepare a reply yourself?

A. I did not. This is a copy of an answer——

Q. Who signed that report?

A. Who signed this letter? [84]

Q. Yes.

A. Lydell Peck and myself, but you prepared the letter in your office.

Q. Did you send the original of that letter to the Shell Oil Company? A. Yes, we did.

Mr. Hackley: Mr. Aurich, do you have any objection to my offering a copy?

Mr. Aurich: Subject to inspection and correction I have no objection to your substituting a copy.

Mr. Hackley: Q. That letter you have identified is a letter dated September 6, 1939 signed by yourself and Mr. Peck and addressed to the Shell Oil Company, Incorporated; is that correct?

A. That is correct.

Mr. Hackley: I offer as Plaintiffs' Exhibit 24 the letter last identified by the witness dated September 6, 1939 sent by the witness and Lydell Peck, the plaintiffs in this case, to the Shell Oil Company, Incorporated.

Mr. Aurich: Object to the introduction of the

(Testimony of Allan B. Ruddle.)

document, if your Honor please, on the ground of its lack of materiality and on the self-serving nature of the declarations. This is a letter that was written after the controversy which is the subject of this suit had crystallized, and it is a letter from Mr. Hackley in which he does no more than write a brief in support of his clients as to all the reasons why the Shell Oil Company should withdraw their notice of cancellation and give them what they want, and it has absolutely no materiality to any of the issues in this case.

Mr. Hackley: If your Honor please, this letter is a letter prepared admittedly by my office, I think by me, for my clients, the plaintiffs in this action as a response to Mr. Aurich's client, the Shell Oil Company and the other defendant [85] here, in their attempts to cancel this contract.

The Court: I will allow it. Proceed.

(The letter referred to was marked Plaintiffs' Exhibit No. 24 in evidence.)

Mr. Hackley: Q. Did you receive an acknowledgment of receipt and reply to the letter Exhibit 24 from Mr. McLaren on behalf of the Shell Oil? I show you a letter dated September 29, 1939 on the Shell Company letterhead.

A. Yes, we did.

Q. The letter which you have here, is that the letter? A. Yes, it is.

Mr. Hackley: I offer the letter identified by the witness dated September 14, 1939, addressed to the

(Testimony of Allan B. Ruddie.)

witness and Mr. Peck, signed L. G. McLaren for the Shell Oil Company, as Plaintiffs' Exhibit No. 25.

(The letter referred to was marked Plaintiffs' Exhibit No. 25 in evidence.)

Mr. Hackley: Q. And finally, did you reply to the letter Exhibit 25 which you have just identified? I show you a copy of a letter dated September 20, 1939.

A. Yes, this is an answer to it.

Mr. Hackley: Mr. Aurich, I have here a copy, again subject to correction.

Mr. Aurich: No objection to a copy.

Mr. Hackley: I offer as Plaintiffs' Exhibit 26 the letter of September 20, 1939 sent by the witness and Mr. Peck to the Shell Oil Company, Incorporated, attention L. G. McLaren.

(The letter referred to was marked Plaintiffs' Exhibit No. 26 in evidence.)

Mr. Hackley: Q. Other than the reports Exhibits 3 and 4 and 13 to 23 inclusive which you have just identified, did you [86] ever receive any written reports prior to the receipt of the letter of July 26, 1939 from Shell Oil Company as to their work under the contract? A. No, we did not.

Q. And the only reports you received prior to the date of this notice of July 26, 1939 were the reports Exhibits 3 and 4; is that correct?

A. That is right.

Q. Did you accept cancellation of the contract

(Testimony of Allan B. Ruddie.)

Exhibit 5 from the Shell Oil Company at the time it was given to you or at any other time?

A. We certainly did not.

Q. Did you ever meet Mr. McSwain after you received the notice Exhibit 10 dated July 26, 1939?

A. I think I met him—I went to lunch with him just prior to that letter we received from Mr. McLaren, because he asked if we had received that letter, if I remember rightly, at this lunch.

Q. Did you make any protest at that time against cancellation of the contract or an attempt to do that by Shell? A. Yes, I did.

Mr. Aurich: I suggest that the witness be asked the substance of the conversation and not led.

Mr. Hackley: I first wanted to find out if there was a conversation, Mr. Aurich.

Q. This was at lunch with Mr. McSwain, was it?

A. That is right.

Q. Where did you have this lunch?

A. Down at the California Market.

Q. San Francisco?

A. That is on Pine Street, I think right off of Montgomery.

Q. In San Francisco?

A. In San Francisco.

Q. Was anybody else present?

A. No, just McSwain and myself.

Q. Give us the substance of that conversation.

A. Well, I [87] wanted to talk to him about the fact that the Shell Oil Company had decided to—without warning, had decided to give this contract

(Testimony of Allan B. Ruddle.)

up and give it back to us. And I had known Floyd McSwain practically all my life, I went to school with him, and I wanted to talk to him about it, tell him what I thought about it, which I proceeded to do. I told him that if the Shell Oil Company had developed something out of my discoveries and for themselves out of it and we did not share in it, I would always feel that we would be robbed—that I would be robbed.

Q. Did you say anything to Mr. McSwain about the term of the contract or anything of that sort?

A. I told him—yes, we even discussed the term of the contract, I think. He said that the contract did not call for anything that the Shell developed.

Q. I am referring now to the term, the time of the contract, the length of time it had to run. Was it discussed at all?

A. I don't doubt but what everything was discussed about it. In fact, I told him how I felt about being treated as they were treating us. But as to whether I discussed the term of the contract, the length of the contract, I don't know. He said that they had decided not to do anything with it; they had spent a lot of money on it. They said they were willing to give back all of their tests, and a copy of all of their tests and so on. I said, "That is due us anyway; the contract calls for that. We have never received anything but the two early tests." He said, "You are going to get them. They are all going to be made up and sent to you."

Q. You say tests; you mean reports?

(Testimony of Allan B. Ruddle.)

A. Those reports—yes, those reports of tests that were made.

Q. Did you discuss anything about this new product Mr. McSwain [88] had mentioned?

A. Well, he had told me just prior to that that the Shell had this new product they couldn't get a patent on.

Q. Did he state what they were going to do with the product? Were they going to give it to you under the contract, or anything?

A. No, no, he said we weren't entitled to that. He didn't say anything about giving it to us; he just said they weren't going to sell it because they couldn't get patent protection on it, and they would just open up the market for others.

Q. Did he state anything about the utility of that product?

A. Yes; he said that product had all the good qualities of linseed oil, which is considered to be the leading core oil in the market, and it also had the fast drying time—that is, the fast baking time that our product had that we took to them.

Q. Core-Min-Oil? A. Core-Min-Oil.

Q. Did I understand you to testify a few minutes ago that this new product was an asphalt and linseed combination of some kind?

A. Yes, they called it—he called it an albino asphalt and some product of linseed; I don't know whether it was straight linseed or not, but I understood him to say that it was made out of linseed.

Q. Did you make any demands on Mr. McSwain

(Testimony of Allan B. Ruddle.)

with reference to the performance of the contract by Shell at this time? A. Yes, we did.

Q. I mean, you personally at this conversation?

A. Yes, I did in this conversation.

Q. What did you say to him?

A. I told him that we expected the Shell to live up to this contract; we were going to insist that they do it.

The Court: We will take a recess for a few minutes.

(Recess.) [89]

Q. Mr. Ruddle, after the exercise of the option by Shell on November 2, 1938, and prior to the receipt of the notice Plaintiffs' Exhibit 10, dated July 26, 1939, did Mr. McSwain or anyone else in connection with the Shell Oil Company give you any memoranda relating to core oils, core oil consumption, or the like? A. He did.

Q. Is this by any chance such a memorandum? Will you examine it, please (handing paper to witness). A. Yes, it is.

Q. Do you recall the particular conference when Mr. McSwain gave you this document?

A. Yes, we were talking about the price——

Q. Before you go into that, do you remember the time and place and if anyone else was present first?

A. Yes, it was with Mr. McSwain. I went over to his office one day and he said, "Here's something that will throw some light on the size of the market,

(Testimony of Allan B. Ruddie.)

something about core oil that I have in my file. Take it and read it."

So we had a discussion about the size of the market and also the price. He said that he had had a report.

Q. Was anyone else present?

A. There might have been. Mr. Harsch might have been there. Mr. Peck might have been there.

Q. Mr. Lydell Peck? A. Yes.

Q. This was at Mr. McSwain's office?

A. At Mr. McSwain's office.

Q. About when was the date, approximately?

A. Well, it was about the time the product was sent down to the Axelson Foundry, probably just prior to that, because we were talking about the market and McSwain said that he was going to try to get a price set on asphalt emulsion, and he also mentioned the size of the market being sixty million gallons a year, this market for Core-Min-Oil.

[90]

Mr. Aurich: This was in 1939?

The Witness: In 1939, yes.

Mr. Hackley: Q. You said about the time of the shipment of some Core-Min-Oil, was it, to Axelson?

A. Yes, I remember we were discussing what we should expect to get out of the market.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 27 memorandum identified by the witness entitled "Vulcan Foundry Company, Oakland, California," bearing the stenographic signatures JH:PEA, and

(Testimony of Allan B. Ruddie.)

dated September 17, 1936, and an additional date on the rear 1/24/38.

Mr. Aurich: I object to the introduction in evidence of this letter, your Honor, on the ground of utter lack of materiality. The letter is dated September 17, 1936, which is a period of time even before this witness had ever been in a foundry, and as far as being any proof of a market, it certainly cannot do that, because the third paragraph of the letter reads:

“Mr. Martin guessed that the consumption of core oils in California was 4,000 to 5,000 gallons per day.”

Obviously, it cannot have any bearing on anything that occurred in 1938 and 1939, which is the date of the contract here in question.

Mr. Hackley: Your Honor, I am offering it as a part of the transaction between the plaintiffs and the defendants. This is something which the Shell Oil Company, through its Mr. McSwain, gave to this witness as a representation, apparently, by the Shell Oil Company of market potentialities for Core-Min-Oil, the product which they had undertaken to sell, and naturally, the document itself is only valuable to that extent, and it is offered to no greater extent.

[91]

The Court: Very well.

(The memorandum referred to was marked Plaintiffs' Exhibit No. 27 in evidence.)

The Court: I am limiting that, this letter dated

(Testimony of Allan B. Ruddle.)

September 1936. It has no relevancy to the issues involved. It has only relation to the conversations had at that time.

Mr. Hackley: That is correct, your Honor. The offer is made with that condition on it.

Q. Mr. Ruddle, will you continue with the description of your conversation with Mr. McSwain just prior to the shipments of some Core-Min-Oil to the Axelson Foundry, particularly with reference to that part where we were discussing the statements made by Mr. McSwain to you about market possibilities for Core-Min-Oil?

A. We were trying to get the Shell Oil Company to do something with this product, and so he said while they were emulsifying——

Q. What do you mean by “doing something with” it?

A. I mean to sell this Core-Min-Oil. He said he thought they had the emulsifying angle solved. They had it in one package. And he was telling me the wonderful results they were going to get from the sale of Core-Min-Oil.

Q. Tell us just what Mr. McSwain said to you.

A. He said that he was trying to establish a price on it, and he said he was going to ask the Axelson people fifty cents a gallon for it, and he said that would be a nice piece of business, because the market, he said, on this product would be something like sixty million gallons a year, if we could sell—replace the linseed oil market.

He said, “Probably the first year we won’t get

(Testimony of Allan B. Ruddle.)

over ten per cent of the market, but it will increase each year. We [92] eventually should get fifty per cent of the market.”

Q. Now, you referred to the shipment of some Core-Min-Oil to the Axelson Foundry. Where is the Axelson Foundry, do you know?

A. The Axelson Foundry, Mr. McSwain told me, was in Los Angeles. They shipped a shipment or a drum, I think he told me, of asphalt emulsion where they had the emulsified product in one package down to the Axelson Foundry. He said when it arrived there he went in and talked to Mr. Axelson, and Mr. Axelson asked him the price of this product, and he said, “Well, fifty cents a gallon.” And McSwain was terribly elated, because Mr. Axelson did not object to the price.

Q. Did Mr. McSwain tell you what type of Core-Min-Oil was sent there? Did he describe that to you?

A. Yes; he said the Core-Min-Oil was sent in one package. That was the description of it, it was emulsified in one package. But he said it arrived there gummy. The emulsion had broken and they were unable to use it.

Q. Mr. Ruddle, you have testified that you gave to the Shell Oil Company the formula for Core-Min-Oil and for the solution that went into Core-Min-Oil. Did you give them anything more [93] than that in the way of information which you had gathered relating to cores?

A. I gave them everything I knew in connec-

(Testimony of Allan B. Ruddie.)

tion with it, all the discoveries that we had made in connection with the use of asphalt and the solution to the Shell Oil Company.

Q. For the purpose of making cores?

A. That is right, for use in foundry.

Q. Did you ever turn over to the Shell Oil Company any information relating to any other foundry product than core oil, any other product which you tried to work out and develop? A. No.

Q. Did you ever turn anything over to them relating to core washes?

A. Oh, yes, I did; I made a core wash out of this solution and carbon—carbon black, they call it.

Q. What do you mean by “this solution”?

A. The solution described as aluminum sulphate, sodium fluo-silicate, and sodium silicate.

Q. The same solution you described as part of Core-Min-Oil, is that right?

A. And carbon black—that is a product of the Shell Oil Company.

Q. One of the Shell——

A. One of the Shell Oil Company's products.

Q. You had prepared a core wash with this Core-Min solution and carbon black as its constituents?

A. Yes.

Q. You said you turned that over to Shell. Just exactly what did you do?

A. I turned that over to Mr. Spotswood, I think, or Mr. Spiri of Vulcan Foundry, and Mr. Spiri reported to me that it worked perfectly.

(Testimony of Allan B. Ruddle.)

Q. When did you deliver to the Shell Oil Company or anybody in connection with Shell any information relating to the formula of that core wash?

A. I gave that to the Shell Company when [94] we signed the contract.

Q. That is, at the same time you gave them the formula for your solution?

A. That is right. I at that time was using a graphite that I had made a core wash with instead of carbon black.

Q. By the way, what is core wash? Will you describe it, please?

A. Yes. After the cores are baked, then they are painted or sprayed with this wash. This wash is supposed to chill the iron so that it won't burn into the cores, and in that way you get a smoother casting.

Q. Did the Shell Oil Company express any interest in your core wash?

A. Well, I talked to Mr. McSwain about it a number of times.

Q. When did you first talk to Mr. McSwain about it?

A. Well, I always talked to Mr. McSwain about it from the time he sent the contract about the putting that on the market, and he always put me off by saying, "We are putting in all the time we can on the Core-Min-Oil. We will get that on the market first."

Q. Did the subject of core wash come up prior to the making of the contract? A. Yes, it did.

(Testimony of Allan B. Ruddie.)

Q. Was there any discussion as to whether or not Shell wanted a license to make your core wash?

A. Well, after we had agreed on the terms of the contract——

Mr. Aurich: Just a minute. I object to any conversations that concern the negotiation of the contract on the ground that they are either embodied in the contract, and therefore they are there, or are not there, and therefore not material.

Mr. Hackley: I agree that the contract speaks for itself, your Honor, of course, as to its contents. This, however, is [95] relating to what products were included within the terms of the contract, compositions for foundry use. Your Honor recalls at the time of the opening statement we brought out the point that Shell had undertaken to manufacture and sell Core-Min-Oil and other products for foundry use or other compositions for foundry use.

The Court: Is core wash one of the items?

Mr. Hackley: I understand it is.

The Court: You understand it is?

Mr. Hackley: My preparation of the case indicates that, but I do not want to be put in the position of testifying in advance of the witness. That is the answer I was trying to get from the witness, however.

The Court: At this time I will allow it.

Mr. Hackley: Do you recall the question, Mr. Ruddie?

(Testimony of Allan B. Ruddle.)

The Witness: Give it to me again, please.

(Question and answer read.)

The Witness (continuing): —I remarked that I also had been able to make a core wash, and so Mr. Gratama of the Shell Oil Company——

Mr. Hackley: Q. Shell Development Company, do you mean?

A. —Shell Development Company spoke up and said, “Well, we want to include that in the contract.”

Q. Did you state that that would be considered included under the contract? A. Yes.

Mr. Aurich: I did not hear you, Mr. Hackley. I didn't hear the question.

Mr. Hackley: I said, Did you state that that would be included under the contract? And he answered “Yes.”

Q. Was the core wash which you developed ever carried forward [96] in the laboratory development or commercialization by Shell that you know of?

A. Not to my knowledge.

Q. Did you ever discuss with Mr. McSwain the fact that Shell had undertaken to market that product? A. Many times, yes.

Q. What were his answers? Were they always the same, they were busy with Core-Min-Oil and didn't have time on that?

A. Yes, or that they had started on that and would get at that right away.

Q. Aside from the statement of Mr. Spiri that

(Testimony of Allan B. Ruddle.)

they would try your core wash consisting of your solution and carbon black, did you have any other discussions with anyone in the Shell organization relating to the merits of your core wash?

A. I talked with Mr. McSwain about it a number of times, but there was nothing done about it.

Q. Mr. Ruddle, was there anything further done than just these conversations on Mr. McSwain's part and the single report of Mr. Spiri relating to the core wash? A. No, there was none.

Q. But you did, as I understand your testimony, constantly press Shell to get busy on that and market that, is that right?

Q. Did you at any time prior to the issuance of the patents Exhibits 1 and 2 disclose to anyone other than the Shell Oil Company, Shell Development Company, and the representatives [97] of those two companies the formula for Core-Min-Oil including the solution in the Core-Min-Oil?

A. I never have, no.

Q. Did you ever at any time prior to the issuance of the patents Exhibits 1 and 2 disclose to anybody other than Shell Oil Company and Shell Development Company and their representatives the formula for your core wash as you have described it? A. I have not.

Q. Has the Shell Oil Company ever paid you any royalties at all under the contract Exhibit 5 on the subject Core-Min-Oil?

A. They have not.

(Testimony of Allan B. Ruddie.)

Q. Have they ever paid you any royalties under the contract Exhibit 5 for the core wash you have described? A. They have not.

Q. Have they ever paid you any monies at all under any guise under the terms of the contract Exhibit 5 or otherwise?

A. No, they have not.

Q. Has the Shell Oil Company ever made any accounting to you for operations under the contract, either with reference to Core-Min-Oil or core wash? A. They have not.

Q. Have you any information from the Shell Oil Company or any of its representatives to the effect that Shell Oil Company or any of its affiliates, subsidiaries or parent companies has ever sold, offered for sale, or attempted to sell so much as a single gallon of Core-Min-Oil or its constituents for use in a foundry? A. No, I have not.

Q. Have you any evidence whatsoever that the Shell Oil Company has ever sold, offered for sale, or attempted to sell, either by itself or through any of its affiliates, subsidiaries, or parent companies, so much as a single gallon of your core wash or its constituent products for use in foundry practice? [98] A. No.

Q. Do you know whether or not Shell has ever sold or offered for sale under the terms of the contract Exhibit 5 any foundry product at all?

A. No, I do not know; not to my knowledge.

Q. You have no evidence of such activity?

A. No, I have not.

(Testimony of Allan B. Ruddie.)

Q. Has Mr. McSwain ever told you whether or not his company has even attempted to market either core wash or Core-Min-Oil or any other product for foundry use under the contract?

A. No, he has not.

Q. Has anyone else in connection with Shell?

A. No.

Q. Have either you or Mr. Lydell Peck, your co-plaintiff in this action and joint licensor of the contract Exhibit 5, or either of you, in any way to your knowledge breached the contract Exhibit 5 or failed to perform fully and faithfully any of its terms provided for you to be maintained and performed?

Mr. Aurich: I object to that as calling for an opinion and conclusion of law.

The Court: Objection sustained.

Mr. Hackley: If your Honor please, I do not mean to argue——

The Court: The Court has ruled. It is a fine speech, but it is not cross examination. Read that question, Mr. Reporter.

(Question read.)

The Court: If that is not a conclusion of law, I am in error. In any event, the Court has ruled. The objection will be sustained. Proceed.

Mr. Hackley: Q. Has the Shell Oil Company or any representative of it—by that I refer to the defendant in this action—ever charged you or Mr. Peck, Lydell Peck, either jointly or severally, with

(Testimony of Allan B. Ruddle.)

breach or failure of performance by you or either of you of any part of the contract Exhibit [99] 5?

A. Not to my knowledge.

Q. Do you consider that the defendant Shell Oil Company, Incorporated, under the terms of the contract Exhibit 5 has diligently attempted to sell Core-Min-Oil and other compositions for foundry use as provided in the contract?

The Court: All this testimony is calling for the conclusion of the witness.

Mr. Hackley: Your Honor, I think it is a proper type of examination. I do not intend to impose myself upon your Honor in that connection.

The Court: I think that it is a habit. Read the question, Mr. Reporter. There is no question in the Court's mind at all.

(Question read.)

The Court: What he considers.

Mr. Hackley: After all, this contract is one which this witness——

The Court: It is calling for the conclusion of this witness clearly.

Mr. Hackley: Yes, but the witness,—after all, the word “diligently”——

The Court: The factual situation governs; develop the facts.

Mr. Hackley: I will withdraw the question. I will withdraw the question. Or if there was a ruling, of course, I will stand on the ruling.

The Court: The objection is sustained.

(Testimony of Allan B. Ruddle.)

Mr. Hackley: I will stand on the ruling.

Q. Have you any evidence or information that the defendant Shell Oil Company has attempted to sell Core-Min-Oil or any other composition for foundry use under the contract Exhibit 5? [100]

Mr. Aurich: Objected to as asked and answered at least three times.

Mr. Hackley: No, that question is asking him if he has any information at all of the performance of the contract.

The Court: You may answer.

A. No, I have not.

Mr. Hackley: Q. Have you any evidence that the Shell Oil Company has attempted to interest its subsidiaries, parent companies or affiliates in the United States in the sale of Core-Min-Oil and other products for foundry use?

A. No, I have not.

Q. Mr. Ruddle, in your complaint you have pleaded that you and your co-plaintiff have been damaged in an amount exceeding \$100,000 by the failure, neglect and refusal of the defendants to perform the obligations of the contract Exhibit 5. How did you arrive at that figure, and on what do you base your calculation of that damage?

A. In my discussion with Mr. McSwain, Mr. McSwain repeatedly told me of a market for Core-Min-Oil that would be at least \$60,000 a year—60,000 gallons a year.

Q. Sixty what?

A. Sixty million gallons a year, and his opinion

(Testimony of Allan B. Ruddie.)

was that we should get ten per cent of that market, and I figured that at the time the complaint was filed, that that would be a fair estimate in payment for neglect to sell.

Q. Ten per cent of the market at what time, Mr. Ruddie?

A. Well, that was an arbitrary figure. We figured ten per cent of a market where we would receive, if they got ten per cent of it, that would be 600,000 gallons and——

Q. Ten per cent of sixty million is what? I think you are trying to make these multiplications in your head there. Do you want to take a pencil and make your calculations? [101]

A. Yes, I think if I had a piece of paper I could do better.

Q. I just want to get your foundation there for a moment. You said that Mr. McSwain told you that there was a market for sixty millions of gallons for Core-Min-Oil in the United States annually?

A. Yes.

Q. And he said to you that you could expect—Shell Oil Company could expect to get ten per cent of the market——

Q. Before you do any calculating, Mr. Ruddie, I want to know exactly the foundation here. How much did Mr. McSwain say was the market for core oils in the United States?

A. Sixty million gallons for core oil.

Q. And what was this figure of ten per cent you referred to?

(Testimony of Allan B. Ruddle.)

A. He said we should get ten per cent of that market the first year.

Q. And after that did he make any statement?

A. He said it should increase, and he figured we would eventually get fifty per cent of the market.

Q. For how many years, or did he say?

A. He said it may take as many as two or three years before they would get up that high.

Q. About when did Mr. McSwain make these statements to you, or did he make them more often than once?

A. He made them many times. We were always talking about it.

Q. Was one of those occasions just before the shipment to Axelson?

A. That is one, yes; I remember the date of that.

Q. How much gallonage did you figure there? You were going to [102] make the calculation.

A. Well, I figure if they got 10 per cent, they would get 600,000 the first year.

Q. Are you taking 10 per cent of 6,000,000?

A. Yes.

Q. 60,000,000 or 6,000,000?

A. 600,000,000, which would be 10 per cent.

Q. I think you are a little tired here, Mr. Ruddle.

Mr. Aurich: If you want a mere calculation, 10 per cent of 60,000,000 is 6,000,000. You do not have to argue about that point.

Mr. Hackley: Yes; I think the witness is a little tired.

(Testimony of Allan B. Ruddie.)

Q. When it comes to these calculations it is difficult.

A. That is right.

Q. The figure is 6,000,000, is it, Mr. Ruddie?

A. That is right.

Q. And that is the figure you took as the amount which Shell should have sold in the first year, as I understood your testimony?

A. That is right.

Q. What price did you figure the product was to be sold at?

A. At fifty cents a gallon, is the price they put up.

Q. You got that price where?

A. That is the price Mr. McSwain put on it at that time. We had often talked of price. That is the first time he had ever definitely set it. That was in the contract—Shell was to set the price, we were not. But he discussed it with us, that is, with Mr. Peck and myself.

Q. And that price he announced to you was what, fifty cents a gallon?

A. Fifty cents a gallon, yes. He said he gave that price to Axelson. Axelson didn't object to it, and he said that would be the price they would set on.

Q. And you figured there would be a gross of \$3,000,000 of core oil that should be sold in the first year under this [103] statement of Mr. McSwain?

A. Yes, those were figures he supplied.

Q. And you calculated its worth based on that measuring stick, is that correct?

A. Yes, that is right.

(Testimony of Allan B. Ruddie.)

Q. In accordance with the contract?

A. Yes, that is right.

Q. And by carrying out those calculations you arrived at the figure which you pleaded as damages in the complaint; is that correct?

A. I think this would be more than that, but we arbitrarily—the complaint says in excess of \$100,000.

Q. Did Mr. McSwain give you any reasons at the time of these conferences that you speak of as to why he felt this company could enter a new market and command large proportions of the sale in that market of this product, Core-Min-Oil?

A. Yes, he said they had 5,000 salesmen that would sell this product, and he said that the salesmen would call on every foundry at least once a month in the United States.

Q. This discussion that you refer to, or these figures specifically were brought out, although I think you said they were brought out a number of times, just prior to the shipment to Axelson of a certain amount of Core-Min-Oil?

A. Yes, I remember that occasion.

Q. Do you know whether there was more than one shipment of Core-Min-Oil to the Axelson Foundry in Los Angeles?

A. No, only one that I was told about.

Q. At that time had the formula for Core-Min-Oil been changed at all from the formula which you had originally submitted to the Shell Company in early 1938 or late 1937?

Mr. Aurich: Are you calling for matters of his

(Testimony of Allan B. Ruddie.)

personal knowledge and not what somebody told him, Mr. Hackley?

Mr. Hackley: Yes, his own knowledge of what the formula [104] was.

A. No, I do not know.

Mr. Hackley: Q. Mr. Ruddie, did you know of any change in the formula that had been made at all during that period? A. No, I did not.

Q. So far as you know, did the formula remain the same as far as the Core-Min-Oil was concerned?

A. Yes, as far as I know.

Q. To your knowledge did Shell ever find any way of improving that formula by varying it in any way? A. No, not that I know of.

Q. State whether or not Mr. McSwain ever told you of any variations, if there were any variations that had been worked out by the Shell Company in the formula of Core-Min-Oil.

A. No, he did not.

Q. So far as you knew, were there any differences between the [105] formula of Core-Min-Oil at the time you had this last discussion with Mr. McSwain and the time when you first turned the product over to Shell?

A. Maybe I do not understand your question. They changed it to put it into one package, if that is what you mean.

Q. I mean the formula, not the container.

A. Not as far as I know.

Q. But I do understand from what you just said

(Testimony of Allan B. Ruddie.)

that Shell had this product changed to try to bring the product into one package; is that correct?

Mr. Aurich: The point I am trying to preserve here, your Honor, is this: I do not mind this witness testifying to anything that any Shell representative told him, but if he is going to testify that a formula was changed or a solution was changed because he knows it himself, that is one thing. If he wants to testify he thinks it must have been changed because somebody told him, that is quite another, and I think that distinction should be preserved.

Mr. Hackley: I will attempt to preserve it, Mr. Aurich. I have tried to isolate the witness' knowledge from statements which were made to him by representatives of the Shell and classify them exactly that way. May I hear what the question is, please?

(Question read.)

A. I know of no change, of my personal knowledge.

Mr. Hackley: Pardon me, your Honor: I just want to check back. I think I have completed substantially the examination here. You may cross examine.

Mr. Aurich: May it please the Court, the witness' deposition was taken on behalf of the defendants a fairly short while [106] ago, and in this deposition he was interrogated about many of the subjects that he has talked about here today. I had intended to

(Testimony of Allan B. Ruddie.)

offer this deposition, and I will offer it now and ask that it may be deemed read in evidence, unless your Honor wants to take the time to have it read, and have it considered as part of my cross examination rather than taking the time of this Court to repeat matters that are already in the record.

The Court: The original record is here? There may be conflicts.

Mr. Aurich: I will bring out the points I want. They are very few. But outside of that——

Mr. Hackley: If your Honor please, I have not looked at that record since it was completed. It has been in our file for only a short while. I have not determined what became of certain objections which were introduced to certain questions in the examination. I do not think the objections were very numerous.

Mr. Aurich: Very few and very infrequent.

Mr. Hackley: I would like to reserve those objections, so if this is going to be received in bulk, I can be heard on the objections.

The Court: I won't allow it to go in in bulk unless you stipulate to it.

Mr. Aurich: I am willing to go further than that. I am willing to stipulate that it may be received in evidence subject to all the objections you made and your general objection as to materiality and competency, of course. I am offering this deposition under the provisions of Rule 26(d) of the Rules of Federal Procedure, which says this:

“At the time of the trial, or upon the hearing of

(Testimony of Allan B. Ruddie.)

a motion [107] or interrogatory proceeding, any part or all of a deposition, so far as admissible under the rules of evidence, may be used against any party who was present or represented at the taking of the deposition, or who had due notice thereof in accordance with any one of the following provisions:”—

Subparagraph under that (d) reads as follows:

“The deposition of a party”—such as Mr. Ruddie—“or of anyone who at the time of the taking of the deposition was an officer, director or managing agent of a public or private corporation, partnership or association which is a party, may be used by an adverse party for any purpose.”

Now, it is under that provision that I am offering the deposition, and for Mr. Hackley's protection, of course, I will stipulate that it should be received subject to whatever objections that are there noted. I do not mean to preclude him from offering any objections.

The Court: Are you willing to stipulate to that?

Mr. Hackley: Yes, I am willing to stipulate to that with the understanding, Mr. Aurich, I have reserved the stated objections and the objections to its relevancy, materiality and competency.

Mr. Aurich: That is right, any objection which is not one that is required to be made at the time of the taking of the deposition you may reserve.

Mr. Hackley: When is it proposed that these objections may be presented before the Court, be-

(Testimony of Allan B. Ruddle.)

cause the purpose of a trial is to settle the objections taken during the taking of a deposition?

Mr. Aurich: Any time you want.

Mr. Hackley: Normally—I might say I never—I might [108] say I never have been presented with this particular procedure before—normally the deposition would be read and argument heard on the objections after the deposition is read.

Mr. Aurich: If you want to go at it that way, that is satisfactory as far as I am concerned. This is the practice I have followed here for years, merely offering the deposition, and if there are any important points of evidence to be considered, they usually can be considered in the final briefs submitted by the parties.

The Court: Proceed, gentlemen.

Mr. Aurich: In connection with the deposition of Mr. Ruddle I offer in evidence a letter of December 9, 1938 from Mr. Ruddle to Mr. Peck, which was identified in the deposition, and ask that it be marked Defendants' Exhibit R. I am sorry we have to start here apparently with R, but the preceding letters are taken up in the deposition.

I also offer in evidence as part of the deposition a typewritten statement of alleged advantages of Core-Min-Oil, which is referred to in the deposition as Defendants' Exhibit T, and I ask that it be received in evidence and so marked.

(The letter of December 9, 1938, Ruddle to Peck, was marked Defendants' Exhibit R in

(Testimony of Allan B. Ruddle.)

evidence; the statement referred to was marked Defendants' Exhibit T in evidence.)

Mr. Aurich: Subject again to your objection,—

Mr. Hackley: Are you offering the balance of the exhibits that were taken in the course of that deposition?

Mr. Aurich: No, I am not, because they are not admissible.

Mr. Hackley: If your Honor please, I do not see how counsel can offer the record and not the depositions that he offered at that time in support of that record. [109]

Mr. Aurich: I am sorry we have to take this time to clear up this procedural difficulty. We might as well do it now and get it straight. Mr. Ruddle at the time of the taking of the deposition was asked to produce a tremendous number of notes. I have them before me. None of those were offered in evidence, not one. They were all marked for identification. The only other document that was offered in evidence at the time of the taking of that deposition is Defendants' Exhibit S, which is a copy of a patent that Mr. Hackley has already offered. If he wants me to duplicate the offer, I will offer Defendants' Exhibit S. None of the other exhibits were offered in evidence.

Mr. Hackley: If your Honor please, I do not see how he can offer a whole deposition and then omit all the documents that were discussed as a part of that deposition. Counsel wants everything that the

(Testimony of Allan B. Ruddie.)

witness said but nothing that was used as a foundation for it. If counsel will offer the entire deposition and the exhibits, I will by ten o'clock tomorrow morning offer to the Court any objections which we have to any part of the deposition. Otherwise they may be considered—[110]

Wednesday, December 3, 1941

10:00 A. M.

ALLAN B. RUDDLE

Resumed.

Mr. Aurich: Unfortunately, your Honor, we were unable to agree as to the method by which the deposition of Mr. Ruddie should be offered and received in evidence, together with—

The Court: I will offer a suggestion to you, then.

Mr. Aurich: Yes, your Honor.

The Court: Probably not known to the patent side of it. Why don't you cross examine him and then use your deposition wherever there is any conflict or anything?

Mr. Aurich: I had intended to do that, and further I had intended to offer the deposition in my case.

Cross Examination

Mr. Aurich: Q. In your testimony you have used the term "friability," Mr. Ruddie. Will you please give me your definition of that term.

A. "Friability," as I meant to use it, meant that

(Testimony of Allan B. Ruddle.)

after a core had been made out of Core-Min-Oil and the casting had been poured, then the sand would have to come out of the casting easily, and that was the term "friability" as I meant to use it.

Q. That would be true whether you used Core-Min-Oil or any other type of a core oil, wouldn't it?

A. That is true.

Q. In other words, you want a core to be of such a character that it will be readily collapsible in the casting to the extent that it would be easily removed therefrom by means of what is termed in the foundry industry a shakeout; is that right?

A. I never heard it called that name, but they tap it with a hammer, or they have machinery that they do it with. [111]

Q. You have never seen a type of apparatus used for removing the cores from castings in a foundry that is termed a shakeout?

A. I possibly have, but I didn't know it by that name.

Q. I am going to hand you a casting, after I have shown it to your counsel, and I would like to have you tell the Court, if you can, what part of that casting, if any, is the core, and what part, if any, is the casting.

A. Well, the core is on the inside and the casting is on the outside of the core.

Q. Is that what you would term a good core?

A. Well, I haven't tried it, but then this is supposed to be broken up easily like that. They tap

(Testimony of Allan B. Ruddle.)

it with a hammer, the way they test it over there in the foundry.

Q. In your opinion, Mr. Ruddle, is the core that is contained in this casting a good core or bad core from the standpoint of friability?

A. I would say that that did not have good friability.

Q. That did not have good friability?

A. In my opinion.

Q. Can you tell me whether that is a good casting or a bad casting?

A. Well, I would say that the casting itself is rough.

Q. Meaning it is bad?

A. Yes, I would say that.

Mr. Aurich: I now ask to have the casting and core shown to the witness offered in evidence and marked Defendants' Exhibit V.

Mr. Hackley: Just a moment. Was that offered in evidence, or just for identification?

Mr. Aurich: Yes, offered in evidence.

Mr. Hackley: Merely to illustrate the witness' testimony?

Mr. Aurich: That is all; merely to illustrate what you do not desire to have in a casting.

(The casting and core referred to were marked Defendants' [112] Exhibit V in evidence.)

Mr. Aurich: Q. If I understand your testimony correctly, Mr. Ruddle, this Defendants' Ex-

(Testimony of Allan B. Ruddie.)

hibit V is what you don't want to have happen in the art of core-making, is that correct?

A. Yes, that would be my answer.

Q. You have stated that you worked in the law office of Mr. James F. Peck for a period of approximately twelve or thirteen years doing legal research work for him. Are you an attorney at law?

A. I am not.

Q. Have you ever studied law?

A. No, only just assisted him in his law office.

Q. Are you a chemist?

A. No, I am not a chemist.

Q. What training and experience, if any, have you had in chemistry?

A. Well, I took chemistry when I went to high school, I think for two years, and then I had some experience with chemistry in the fireproofing of lumber.

Q. That was with Mr. Watson's solution?

A. Yes, that is it.

Q. Outside of the two years of chemistry that you had in high school, what has been your technical education and training along any lines?

A. Well, I guess no technical training.

Q. You have described to us the making of your core oil which you have identified by the name Core-Min-Oil, and I believe you testified that you commenced that work about the beginning of 1937. And I also understood you to say that the first foundry you ever visited in your life was the Santa Fe Foundry in Richmond; is that correct?

(Testimony of Allan B. Ruddle.)

A. That is right.

Q. Had you begun your work on the development of your core oil before or after your visit to the Santa Fe Foundry?

A. Well, some time prior to that, because I took samples that I had made to the Santa Fe Foundry. [113]

Q. When did you commence experimenting with the core oil composed of your solution which you have described and an asphalt emulsion?

A. I took samples of asphalt—asphalt emulsion, pardon me; that was about September, as I recall, of 1937.

Q. Where did you get the idea of using asphalt emulsion as one of the ingredients of your core oil?

A. Well, I was looking for and trying everything. That was one of the things that I tried.

Q. Where did you get the idea of using asphalt as one of the ingredients of your core oil?

A. I went to the Philadelphia Quartz one day to talk to Dr. Cleveland about the trying of Core-Min-Oil at the Macauley Foundry. I was then using a red oil and a pale oil in the solution, and the day that I was over there, why, he told me that the Union Oil Company had sent a gallon of asphalt emulsion there for him to try to waterproof corrugated paper boxes, and he said, “Do you want to take that and try it?” And he had suggested many other things for me to try. I tried different things.

Q. In short, the idea of using asphalt emulsion

(Testimony of Allan B. Ruddle.)

as one of the ingredients of your core oil came from Dr. Cleveland; is that correct?

A. I won't say the idea came from Dr. Cleveland. The asphalt emulsion came from Dr. Cleveland. Dr. Cleveland at that time did not know what I was doing or did not suggest how to try this.

Q. Had you used the asphalt emulsion in your core oil before you talked to Dr. Cleveland?

A. No, I had not.

Q. Prior to the time that you commenced experimenting with the asphalt emulsion as one of the ingredients of your core oil you had theretofore been experimenting with various types of mineral oil, red oil and pale oil?

A. That is right. [114]

Q. What were the results of those experiments that you had been performing with a core oil using those mineral oils; were they satisfactory or unsatisfactory?

A. The friability was not good.

Q. Well, can you answer my question directly, Mr. Ruddle, please; Were they satisfactory or unsatisfactory cores?

A. They were unsatisfactory; they were very comparable with that core you have in front of you there.

Mr. Hackley: May I ask that the record show what exhibit the witness is referring to?

Mr. Aurich: Q. What exhibit did you indicate?

A. The core and casting that you just referred to.

(Testimony of Allan B. Ruddle.)

Mr. Hackley: Defendants' Exhibit V.

The Witness: Yes, that is right.

Mr. Aurich: Q. To put it in a very few words, Mr. Ruddle, all of your experiments prior to the time that you commenced experimenting with asphalt emulsion as a core oil and during the time that you were using the red oil and the pale oil were failures; isn't that correct?

A. Well, yes, they were a series of tests that I had been running.

Q. Is your answer to my question Yes or No, Mr. Ruddle? A. Yes, they were failures.

Q. In connection with your work at Macauley Foundry you mentioned a man by the name of Otto Gosch.

A. I think it is Otto Gosch, or some such name.

Q. When was the last time you have seen Mr. Gosch?

A. I have seen him this last week. [115]

Q. Where is he now, do you know?

A. He is at the Macauley Foundry.

Q. In some of your previous testimony yesterday—I refer particularly to pages 26 and 27; I will show it to you—you said that "After we had determined the right proportions," "we felt that we had the product ready for somebody to market," and similar statements using the plural "we."

A. I meant——

Q. Whom did you mean by "we" at that portion of your testimony?

(Testimony of Allan B. Ruddle.)

A. I meant that I tried all of the proportions, but I discussed with Mr. Lydell Peck and Mr. James F. Peck about marketing it.

Q. Did Mr. Lydell Peck and Mr. James F. Peck agree with you that you had reached the desired formula at the time that you state you had reached it?

A. After I explained to them what I had.

Q. In some of your previous testimony you have also mentioned that you never lost a single casting made with Core-Min-Oil; is that correct?

A. That is a true statement.

Q. How many cores did you lose?

A. Well, that would be hard to say. Sometimes we lost all the cores that we made when we baked them in a direct fire oven. Sometimes we would make cores and there would be no losses. At that time I did most of my baking at noon, during the noon hour when the workmen would turn the fires off, and the heat from the ovens—I would put into the—put the cores into the ovens, and during the noon hour, why, I would bake maybe eight or ten cores. Those cores we would examine, and some castings were poured from them.

Q. Out of those eight or ten cores you say you would make at one time, how many castings would you pour?

A. Oh, maybe [116] one or two; maybe even more than that; three or four sometimes.

Q. Do you understand that pouring a casting is

(Testimony of Allan B. Ruddle.)

a correct technical description of what you are describing?

A. Well, now, maybe that is the wrong term, but that is the term that I have heard used at the foundry.

Q. In other words, what you would do would be to make up a series of eight or ten cores and you would take them out of the oven; you would inspect them, and you would pick out one or two of the most likely ones, and from that have castings made; is that right?

A. Yes, that is right. Not the most likely ones; we picked out those that were good cores; those that were soft we threw away.

Q. You haven't any idea of the percentage or ratio of cores made to castings made by you while at the Macauley Foundry, have you?

A. Oh, no, no; we made many more cores than we did castings.

Q. You have testified that since the Shell Company had your Core-Min-Oil, as you expressed it, the American Brake Shoe Company wanted the product. When was it that the American Brake Shoe Company wanted the product, since as you say, the Shell Company has had it?

A. Well, Lydell Peck told me that the American Brake Shoe Company had requested that—had told him that they wanted the product, would like to have the product; that was during the time that Spiri was running the test on it. And I went to

(Testimony of Allan B. Ruddle.)

the Shell Oil Company and told Mr. McSwain about it, and I also told Mr. Spiri about it.

Q. What did you tell Mr. McSwain?

A. I told Mr. McSwain that the American Brake Shoe Company had been asking to use that product in their foundries.

Q. And this was after Mr. Spiri commenced work on the problem? [117]

A. Yes, it was during the time that Mr. Spiri was working on the problem. Mr. Spiri told me that he was going to see them, but I never heard whether or not he did.

Q. Did you ever let the American Brake Shoe Company have your product?

A. No, we didn't.

Q. Why not?

A. Well, I understood the American Brake Shoe Company was a small outfit, had some foundries of their own, and we were trying to get this in the hands of somebody that would market it all over the United States.

Q. It was already in the hands of Shell, wasn't it?

A. We went—pardon me; I thought you meant prior to going to the Shell.

Q. No, I don't mean prior to going to the Shell. Your testimony is that after Shell had it, that the American Brake Shoe Company wanted it; is that correct?

A. That is right. You are right so far.

(Testimony of Allan B. Ruddie.)

Q. And that time is fixed as some time subsequent to the time that Mr. Spiri commenced working with your core oil; is that right?

A. That is right; that is right.

Q. For the purpose of trying to establish a date approximately, I may say that that time will be fixed as being sometime in the latter part of 1938—in November, at least. Now, what I want to know is, after November of 1938 when the American Brake Shoe Company wanted your product, as you say, why didn't you let them have it?

A. Well, I did go to the Shell Oil Company and tell the Shell Oil Company about it. We were under contract to the Shell Oil Company; we couldn't sell it to them.

Q. You say you were under contract with Shell and you couldn't sell it to them?

A. That is what I understood.

Q. After April 8, 1939 did you make any endeavor to take your [118] product to the American Brake Shoe Foundry Company? A. No, sir.

Q. Why not?

A. Because we were under contract to the Shell Oil Company.

Q. Didn't you know that the contract contained a provision that if Shell did not sell the required and specified minimum amount of Core-Min-Oil within a yearly period, you had the right to declare the contract non-exclusive?

(Testimony of Allan B. Ruddle.)

A. We were in no position to make a quantity of Core-Min-Oil and deliver it to anybody.

Mr. Aurich: I don't believe that quite answers my question, your Honor. May I have it read?

The Witness: That is the reason.

The Court: Answer the question.

A. Well, that is possible, but I know that we didn't declare it non-exclusive, and we took the order to Shell Oil Company. It wasn't an order; it was just an inquiry from the American Bitumuls Company—I mean American Brake Shoe Company.

Mr. Aurich: Q. In other words, after April 8, 1939 you made no effort to have the contract which is here in controversy between you and Shell declared non-exclusive? A. No, we did not.

Q. If I understand your testimony correctly, Mr. Ruddle, you know nothing at all about this American Brake Shoe Company wanting your product other than what Mr. Peck may have told you? [119]

A. No, that is all I know.

Q. Now, you have mentioned a man by the name of Mr. Spotswood in your testimony, and you have testified that at a certain time not given in your testimony Mr. Spotswood was assigned to the job of doing some work with your Core-Min-Oil at the Vulcan Foundry. When was it that Mr. Spotswood was so assigned?

A. Well, it was in the early negotiations with Mr. McSwain.

Q. Was it prior to the signing of the contract?

(Testimony of Allan B. Ruddie.)

A. Yes, it was.

Q. Was it a month prior to the signing of the contract?

A. Yes, I would say even longer than that.

Q. By testifying that Mr. Spotswood was assigned to the job of doing some work with your Core-Min-Oil at the Vulcan Foundry, do you mean in connection with his attempts to discover what was causing the softening of your cores on occasions?

A. Yes, that was one thing Mr. McSwain asked Mr. Spotswood; anyway, that was——

Q. I just want matters of your own personal knowledge, Mr. Ruddie.

A. Well, I can only report what Mr. McSwain told me. He did not tell—he didn't give Spotswood his orders in front of me.

Q. Tell us what Mr. McSwain told you that he told Mr. Spotswood.

A. Mr. McSwain said he was having Mr. Spotswood make a lot of tests and examine Core-Min-Oil.

Q. And this was at the Vulcan Foundry?

A. No, I think at Macauley Foundry is the first place I met Mr. Spotswood.

Q. Well, we are getting away from our subject. I want to confine you to your testimony that you gave yesterday wherein you testified that at some time not given in your testimony yesterday Mr. Spotswood was assigned to the job of doing some work with your Core-Min-Oil at the Vulcan Foundry.

(Testimony of Allan B. Ruddle.)

dry, and I am not talking about Macauley; I am directing your attention [120] specifically to the Vulcan Foundry. Is it your testimony now that Mr. Spotswood was assigned to do some work at the Vulcan Foundry in connection with his endeavor to overcome the difficulty you had been experiencing with the softening of your cores?

A. Yes, that is true.

Q. You have likewise testified that in February or March 1938 Mr. Spotswood made a number of cores in the Shell electric oven at the Vulcan Foundry. Is it your testimony that Mr. Spotswood was engaged in making cores at the Vulcan Foundry in February or March 1938?

A. Well, I won't try to attempt to fix the time, but I know that he was at the Vulcan Foundry with me. I went there with Mr. Waller and met him there.

Q. Let us take the date of the signing of the contract. Is it your testimony now that Mr. Spotswood was at the Vulcan Foundry making cores at any time prior to the date of the signing of the contract, April 8, 1938?

A. Well, I won't be sure about that. I do know that he worked on it at Martinez.

Q. I am confining myself to Vulcan, Mr. Ruddle, and the reason I am doing that is because you were so definite yesterday in placing Mr. Spotswood at the Vulcan Foundry in February or March 1938. I want to know if that is your correct testimony, whether you are positive of it.

(Testimony of Allan B. Ruddie.)

A. I know that he was at the Vulcan Foundry there, but what work he did at that time I wouldn't recall.

Mr. Hackley: Mr. Aurich, as long as there is a debate about the record, may we ask you to tell what page you are referring to and let me show the record to the witness?

Mr. Aurich: Yes; page 40.

Mr. Hackley: What line do you have in mind?

Mr. Aurich: The whole page. [121]

Mr. Hackley: I don't know what he wants; you may look at that transcript (handing transcript to witness).

Mr. Aurich: Here is where the witness started relating all these events that happened in February and March 1938 at the Vulcan Foundry.

The Witness: I think from reading this that Manuel was the coremaker that did the actual work at the Vulcan.

Mr. Aurich: Q. Let's go at it a little bit at a time, Mr. Ruddie, so that we can straighten it out. I will ask you again directly, At any time prior to the signing of the contract here in controversy between you and Shell did you ever see Mr. Spotswood make one core at the Vulcan Foundry?

A. No, I won't say that I did.

Q. At any time prior to the signing of the contract here in controversy, which is April 8, 1938, did you ever see Mr. Spotswood make one casting from any core made at the Vulcan Foundry?

(Testimony of Allan B. Ruddie.)

A. No; he wouldn't make a casting.

Q. At any time prior to the signing of the contract——

A. Before or after——

Q. ——here in controversy, dated April 8, 1938——

The Witness: I say before or after the contract was signed Spotswood never made a casting.

Mr. Aurich: Q. Prior to the signing of the contract here in controversy between you and Shell dated April 8, 1938 did you ever see Mr. Spotswood at the Vulcan factory at all?

A. Prior to signing that contract?

Q. That is right. A. Yes, I did.

Q. You are quite positive about that?

A. Yes, I am quite [122] positive.

Q. Did you ever see him mix any core sand with your Core-Min-Oil in the Vulcan Foundry prior to April 8, 1938?

A. I won't say positively that I saw him. My recollection is that he did, but I wouldn't say positive whether he did; I haven't any records or anything to show.

Q. You have no recollection now of what, if anything, Mr. Spotswood may have done at the Vulcan Foundry prior to the signing of the contract of April 8, 1938?

A. No, I wouldn't attempt to recall the dates, but I do know that he went to the Vulcan Foundry and there met Mr. Waller.

(Testimony of Allan B. Ruddie.)

Q. We can agree on the fact, Mr. Ruddie, that Mr. Spotswood was at the Vulcan Foundry?

A. Yes, I recall that.

Q. You have also made mention of a man by the name of Mr. Waller, and you testified that Mr. Waller was supposed to watch the work done and report to Mr. McSwain about it; is that right?

A. Yes, that is true.

Q. What else did you ever see Mr. Waller do in connection with the art of core-making?

A. He just observed it and made notes. He made notes of everything that was done at that time.

Q. You didn't see his notes?

A. Yes, I read many of his notes at the time he was writing them down, and he would read them to me. They were so well written, I remember, we commented on the notes.

Q. Did you ever see Mr. Waller mix any core sand with your core oil or any other ingredient?

A. No, I did not.

Q. Did you ever see Mr. Waller ever make a core? A. No.

Q. Did you ever see Mr. Waller pour a mold?

A. Oh, no.

Q. I don't suppose you ever saw him make a casting?

A. No, I never saw him make a casting. [123]

Q. Do I understand your testimony to be that while Mr. Spotswood was making cores at the Vulcan Foundry at any time that you can recall that

(Testimony of Allan B. Ruddle.)

no casting losses resulted in so far as your personal observations were concerned?

A. That is true.

Q. How about the loss of cores?

A. Well, when they were baked in that oven that had the gas in it, there were many losses. Some days we would lose them all; other days they would not be affected. [123-A]

Q. What type of oven did they use other than the regular oven at the Vulcan Foundry?

A. That was an open fire oven where the flames came in contact, the gas comes in contact with the cores.

Q. I am afraid you did not listen to my question, Mr. Ruddle. My question was, What other type of oven did they use at the Vulcan Foundry other than the regular oven?

A. They only used the one type of oven.

Q. Were no cores made at the Vulcan Foundry in an electric oven?

A. Not belonging to the Vulcan Foundry, that I know of.

Q. Did Mr. Spotswood ever make any cores in an electric oven at the Vulcan Foundry?

A. Yes, he brought an electric oven from the Shell Company to the Vulcan Foundry and there made cores.

Q. In what oven were those cores baked that you said resulted in no casting losses?

A. Well, some of the castings were poured from cores that were baked in that open fire oven.

(Testimony of Allan B. Ruddie.)

Q. Now, with respect to those, what was the percentage of loss of cores?

A. Well, that would be hard to tell, because some days we didn't lose any, and other days we would lose them all.

Q. In other words, a 50-50 average would be fair?

A. I wouldn't attempt to average them. I would say more were lost than were good.

Q. Now, Mr. Spotswood used an electric oven, you say? A. Yes.

Q. When he used this electric oven, did you observe the results of the cores made therein?

A. Yes; they were all perfect.

Q. Every one was perfect?

A. Every one that I saw was perfect.

Q. There wasn't one thing wrong with any one of them?

A. Not that I saw when I was there.

Q. What is the largest size core that you ever made, or that you ever personally witnessed making, or witnessed the making of, in which the sand was first mixed with your Core-Min-Oil? [124]

A. I think a Union Diesel head out at the Macauley's was about the largest that I saw.

Q. How large was that?

A. Well, it stands possibly two feet high, and probably three feet long, and then it is—one end of it is very thick, and then it has very thin edges through it.

(Testimony of Allan B. Ruddie.)

Q. In other words, it is a core of varying thicknesses? A. Yes, it is.

Q. Were you there all the time that core was being made? A. Yes, I was.

Q. That was made by Mr. Otto Gosch?

A. Well, either Otto Gosch or one of the others in there.

Q. This is Macauley's?

A. At Macauley's Foundry, yes.

Q. How long did it take them to make that core?

A. Well, I don't recall just how long it was, but they were quite a little while doing it.

Q. A matter of hours?

A. Yes, I would say it was an hour or more; maybe two hours. There were quite a lot of parts to go into it.

Q. It was quite an intricate core?

A. Yes; they say it is the hardest core they have there to make at the Macauley Foundry.

Q. In your direct testimony you mentioned that one of the alleged advantages of your Core-Min-Oil was that it had a faster baking time than, say, linseed oil. A. Yes.

Q. You have also testified, I believe, that as the size of the cores increased, the relative baking times between linseed oil and Core-Min-Oil decreased?

A. Well, that was—yes, that was noticeable. It wasn't a great deal of difference.

Q. How far did you carry that experiment to determine whether or not you would ever reach a point at which a core made with linseed oil might

(Testimony of Allan B. Ruddie.)

not bake faster than a core made with Core-Min-Oil? [125]

A. Well, I do not think that is possible.

Q. You do not think that is possible?

A. No, I would not; not from any test that I ever run.

Q. Let us see what tests you made to determine that.

A. Well, that Diesel engine that we talked of—that was about the largest one I ever made—and that baked in about one-third of the drying time of linseed oil.

Q. How long did it take to bake that core two feet high and three feet long?

A. I won't attempt to give you the figures. I only recall it was about one-third of the time.

Q. You do not recall?

A. I couldn't tell you the time it took to bake it.

Q. Were any cores baked on that same occasion with linseed oil?

A. No; it was Houghton Oil we used there when we timed one of their cores and timed this. It was about one-third of the time.

Q. Did you time a Union Diesel head core made with Houghton Oil? A. Yes, we did.

Q. And what was the time that it took you to bake that?

A. I don't recall. All that I remember is that I marked down in my notebook someplace that it was done in one-third of the time.

(Testimony of Allan B. Ruddle.)

Q. What was the width of this Union Diesel head core?

A. Oh, as I recall, it was about a foot and a half wide, something like that.

Q. Of course, you did not bake that Union Diesel head core with Core-Min-Oil in Macauley's direct-fired oven, did you?

A. Yes, we did bake the Core-Min-Oil in Macauley's oven.

Q. With the fire on?

A. Yes, and it did not affect that one. I tried several others that it did affect.

Q. But you attempted to make more than one core of the dimensions and description you have given, with your Core-Min-Oil? [126]

A. Many of them.

Q. Can you recall one that was poured?

A. I can recall many that were good.

Q. I am speaking of the Union Diesel heads.

A. Yes, that is what I am talking about.

Q. There was more than one that was good?

A. Yes; and we poured one casting of Union Diesel, too.

Q. Was that one casting the only one you ever poured?

A. That was the only one we ever poured with Union Diesel.

Q. That is the only test you recall making to determine the comparative baking times between Houghton Oil or linseed oil on the one hand and

(Testimony of Allan B. Ruddie.)

Core-Min-Oil on the other, with respect to the size of the core?

Mr. Hackley: Would you fix that as to time? Is this before he took the product to Shell, Mr. Aurich?

Mr. Aurich: I am asking him what he did at any time.

A. Yes, this is prior to taking the product to Shell.

Q. I am asking about any time, Mr. Ruddie. I am asking you what you have done, not what somebody else may have done for you.

A. Well, that was done at the Macauley Foundry, yes.

Q. That is the only test you ever made to determine that fact? A. Yes, that is right.

Q. When did you first tell anyone connected with either of the defendants in this case of the percentages of sand, solution, emulsion and water that was used by you in making your cores?

A. Well, it was sometime after I first talked with Mr. McSwain about it. We made arrangements to go over to the Macauley Foundry, and at that time I made a core for them over there at the foundry.

Q. And did you tell them then what the percentages of the various ingredients I have mentioned were?

A. I don't recall whether [127] I did or not.

Q. Well, you do recall making a disclosure to Mr. Spotswood, as you have testified?

(Testimony of Allan B. Ruddie.)

A. Yes, yes; that was just within a few days afterwards, as I recall.

Q. That was made at the Macauley Foundry, or Martinez? A. At Martinez, I think.

Q. Will you give the percentages that you gave Mr. Spotswood at that time?

A. As I recall, I gave him 1750 cc's of dry sand, 80 cc's of solution, 50 cc's of asphalt.

Q. Is that all? A. That is all.

Q. What do you mean by "dry sand," Mr. Ruddie?

A. Well, sands in a foundry—they either have dry sand or wet sand.

Q. I don't understand whether you said "dried" or "dry."

A. No; they get it from people who sell sand. It comes either wet or dry.

Q. How does the sand that comes right from the mines or places where sand is procured appear? Is that a wet sand or a dry sand?

A. They generally use wet sand over at the Macauley Foundry, and in the Vulcan Foundry, but they can be supplied either way. I talked to the man——

Q. Did——

A. (Continuing): ——that supplies sand from —oh, what is the name of that—the company that Mr. Ballentine is the man that sells it. I have talked to him a number of times. Their offices are in the Crocker Building.

(Testimony of Allan B. Ruddie.)

Q. Did you ever experience any difficulty in the use of your Core-Min-Oil when you used wet sand?

A. Well, you have to change the proportions, because by using this formula I gave you, it gives you about the right consistency of [128] water. If you use wet sand, why, you have to cut down on your proportions.

Q. What would you cut down?

A. Well, you would cut down the amount of bulk asphalt emulsion, and also solution.

Q. What would you cut it down to?

A. Well, I couldn't give you the amount of that. The formula I used was dry sand.

Q. Well, I thought you just told me——

A. But your baking time immediately goes up as soon as you use the wet sand, because you have to dry the moisture out.

Q. In other words, if you use wet sand it takes longer to bake than if you use dry sand?

A. Yes, that is right.

Q. Didn't you tell me a moment ago they use wet sand at the Macauley Foundry?

A. With Houghton Oil, yes.

Q. What did they use when they used your formula, or your Core-Min-Oil?

A. We used dry sand.

Q. You used dry sand?

A. They have dry sand—they have both wet and dry sand.

Q. So that is another factor you must take into consideration in arriving at the alleged novelty of

(Testimony of Allan B. Ruddle.)

shorter baking time, that with Houghton Oil they were using a wet sand, while with Core-Min-Oil they were using dry sand, is that right?

A. We went into that with Mr. Ballentine. They said it didn't make any difference to them.

Q. I do not care what you went into with Mr. Ballentine. I didn't ask you that.

A. You mentioned a difficulty about it, and I tell you there isn't a difficulty there.

Q. You are not answering my question by telling me what someone else said.

I will ask that the reporter please read the question—I believe it is a simple question—and ask you, if you can, to [129] answer it.

(Question read.)

Mr. Aurich: Q. And this formula that you say you gave Mr. Spotswood was one which could not be used with wet sand, but, on the contrary, is one which must be used with dry sand, is that right?

A. That is right.

Q. And you cannot now tell me what formula you would use with your Core-Min-Oil if you wanted to make a core with wet sand?

A. No; I tried that. I had a million tests on that—a hundred tests on that—but I couldn't give you it now.

Q. Did you ever arrive at a satisfactory answer to that problem?

A. Yes, I think we did—I think I did at one time—but I couldn't give it to you now.

Q. You kept quite a few notes on your work

(Testimony of Allan B. Ruddle.)

that you did at Macauley's and elsewhere, didn't you?

A. Yes, I have volumes of notes.

Q. You have got some of your diaries here?

A. There is just a little bit left there. I have been unable to find it.

Q. Have you looked through those recently to see if there is any formula that would——

A. No, I have not.

Q. In addition to this formula that you say you gave to Mr. Spotswood, did you ever use a formula that consisted of 1750 cc's of sand, 125 cc's of solution, 40 cc's of asphalt emulsion, and 65 cc's of water?

A. Well, I might have given him that. That might be the one. I don't know offhand.

Q. You will notice in the formula that I have given you the percentage of solution has been increased and, in addition, we have added water. You would not be likely to use that with the wet sand, [130] would you?

A. I wouldn't know without trying it. I certainly could not carry it all the time in my head.

Q. Did you say you might have given that formula to Mr. Spotswood?

A. That is possible, yes. I tried to give him everything on Earth that I had found out about it.

Q. As a matter of fact, Mr. Ruddle, that formula I just read to you is just about your preferred method of making Core-Min-Oil, isn't it?

(Testimony of Allan B. Ruddie.)

A. Well, I wouldn't know without studying it.

Q. Well, I will write it out on a piece of paper and hand it to you so you can look at it, if you will, with the Court's permission. I am now handing you a sheet of paper on which I have written the formula that I have described to you a few moments ago, which is 1750 cc's of sand, 125 cc's of solution, 40 cc's of asphalt emulsion, and 65 cc's of water, and I will ask you to look at it, and study it, and tell me whether or not that is the best formula that you know of for making your Core-Min-Oil?

A. No, this would not work.

Q. Do you consider that a good formula for making your Core-Min-Oil?

A. No, I would say it would be too wet.

Q. It is not one that is suitable for making cores, is that right?

A. That would be my guess now, without trying it.

Q. As a matter of fact, Mr. Ruddie, that is the formula you set forth on page 2 of your patent here in evidence, Plaintiff's Exhibit 1, is it not? I call your attention to page 2.

A. Well, that is an example.

Q. Example of what?

A. That is one example of the striving—how this is used in the patent.

Q. How what is used in the patent?

A. Just a minute. This is typical proportions, it says, used in practicing the present invention.

(Testimony of Allan B. Ruddie.)

It is not an exact formula. That particular formula, I [131] think, would be too wet, without trying it.

Q. Had you never tried that formula set forth on page 2 of your patent, Plaintiff's Exhibit 1?

A. I couldn't tell you right now whether that formula was tried or not. This formula—this was all done by a patent office. I don't know that I could describe this.

Q. What do you mean was done by a patent office?

A. This patent was gotten out by a patent office.

Q. You mean by a patent attorney?

A. Yes, that is right. I understand that these are limits which are taken into consideration.

Q. Well, you recall that the application for this patent was presented to you before it was filed, don't you?

A. Yes; surely. I had to sign it.

Q. You signed it. You signed it under oath?

A. That is right.

Q. And read it? A. That is right.

Q. You understood it at that time?

A. Yes, I understood the patent, but I don't know that I knew exactly that formula, or that particular formula, or not.

Q. To sum it up, at the present time you have no present recollection of whether or not the formula for making your core oil appearing on page 2 of your patent, Plaintiff's Exhibit 1, which is

(Testimony of Allan B. Ruddie.)

the formula I have last referred to, was satisfactory for making a core?

A. No, I would not know. I wouldn't be able to tell you right now.

Q. Is there any other formula for mixing your Core-Min-Oil with sand, for core oil purposes set forth in the patent?

Mr. Hackley: Referring to the patent, Plaintiffs' Exhibit No. 1.

Mr. Aurich: That is right, Exhibit 1. I won't take the time——

A. There is no formula here. There is nothing specific about it. [132]

Q. We won't take the time now to read it, Mr. Ruddie, but for your information, I will state for the benefit of the Court, this patent, Plaintiffs' Exhibit No. 1, contains a formula for mixing a solution which is used in the product Core-Min-Oil, which formula appears on page 1, column 1, and also in claims 2 and 3 on page 2. In addition to that, in the first column on page 2 of Plaintiffs' Exhibit 1, appears a formula for making Core-Min-Oil, which is the formula I have referred to, or rather, directed the witness' attention to, which is the only formula for that purpose in the patent.

Mr. Hackley: If your Honor please, I think that counsel may have inadvertently misled the Court a little. I would like to read the language counsel is referring to. Starting on line 3, page 2, of Patent 2,193,346, it says:

(Testimony of Allan B. Ruddie.)

“The following formula is cited as typical of the proportions used in practicing the present invention, but the exact proportions given are not to be taken as actual nor as limiting the scope of the invention.”

And then follows the formula:

“1750 cc's dry sand, 125 cc's of solution approximately: Two gallons of water, one to ten ounces of aluminum sulphate, one to ten ounces of alkali silicate, one to ten gallons of an alkali metal silicate, 40 cc's of asphalt emulsion, and 65 cc's of water.”

And then follows the mixing procedure. There is no reference to Core-Min-Oil anywhere in there.

Mr. Aurich: Q. What is the formula that your counsel has just read into the record and which appears on page 2 of your patent, Plaintiffs' Exhibit 1? Isn't that the formula for making Core-Min-Oil?

A. No; that is an example of a formula that was used in making Core-Min-Oil. [133]

Q. You are quite sure of that, Mr. Ruddie?

A. Well, it is meant to be an example.

Q. Is that a formula for making Core-Min-Oil, or is it not?

A. I would say it is not the best formula.

Q. Is it a formula for making Core-Min-Oil?

A. Yes, it is a formula.

Q. For making Core-Min-Oil? A. Yes.

(Testimony of Allan B. Ruddie.)

Q. Referring again to that formula appearing on page 2 of your patent, Plaintiffs' Exhibit 1, what is the ratio of solution to emulsion?

Mr. Hackley: I object on the ground the patent speaks for itself, your Honor. It is all there.

The Court: Overruled.

A. Well, it is 125 cc's of solution and 40 cc's of asphalt.

Mr. Aurich: Q. Can you tell me what the ratio is, in parts? Roughly it is $12\frac{1}{2}$ to 4, isn't it, Mr. Ruddie? A. Yes, that is right.

Q. In the formula that you say you may have disclosed to Shell, or did disclose to Shell, consisting of 1750 cc's of dry sand, 80 cc's of solution, and 50 cc's of emulsion, the ratio of solution to emulsion is eight to five, is that right?

A. That is right.

Q. Did you ever make a core with Core-Min-Oil in which you used a ratio of $12\frac{1}{2}$ parts of solution to approximately four parts of emulsion?

A. Oh, yes, I have; every possible proportion I could think of. [134]

Q. Did you ever give Shell any other formulas for making your Core-Min-Oil?

A. Well, I won't say that I did. When I gave him the one I related there that you have written down, I think it was the best one—I gave them that.

Q. You think the best one was the 1750 cc's of sand, 80 cc's of solution, and 50 cc's of emulsion?

(Testimony of Allan B. Ruddle.)

A. That is right.

Q. You do not think much of this formula in your patent, Plaintiffs' Exhibit 1?

A. No, I wouldn't say that is a good formula.

Q. Did you ever use a formula for making Core-Min-Oil which was composed of 2100 cc's of sand, 80 cc's of solution, 50 cc's of emulsion, and 20 cc's of water?

A. Yes, I have.

Q. By the way, what is meant by "cc's," Mr. Ruddle?

A. Cubic centimeters.

Q. Where did you use that formula that I have just described?

A. I used that in Macauley Foundry.

Q. For what purpose?

A. Well, in making castings, the part that has to have the thin edges, that has to be strong, why, you have to have a little richer mixture. In the parts of the castings where it does not require such strength, you can use a weaker mix, and that one you just related would be a weaker mix.

Q. Did you tell Shell all about that when you talked to them about your Core-Min-Oil?

A. I told them everything I could think of.

Q. Can you tell me one occasion now when you told them, "When you want a core, or when you want to make a core as you have last described, do not use the formula for making Core-Min-Oil that I first gave you, but use a formula consisting of 2100 cc's of solution"—and et cetera?

(Testimony of Allan B. Ruddle.)

A. I don't recall any specific time of telling them that, but I know I did.

Q. You know you did?

A. Yes, I am positive that I did. [135]

Q. Has anyone from either of the defendants herein ever advised you that the Shell Company was abandoning all of its efforts to manufacture or sell any type of core oil?

A. No; I think you did.

Q. That was the first you knew about it?

A. Yes, that was the first that I recall. I think Mr. McSwain said they were not going to sell Core-Min-Oil, or even what they had developed, because they were unable to patent it.

Q. Outside of what Mr. McSwain told you and what I told you, you had no knowledge on the subject at all?

A. No, that is all.

Q. And when you refer to my telling you, that was on the occasion of taking your deposition within the last month?

A. That is right.

Q. Nobody else in the Shell Company ever advised you of that fact?

A. Well, there might be something, letters or something; I don't recall now.

Q. As a matter of fact, don't you recall receiving a letter from Mr. McLaren, one of the vice-presidents of the Shell Company, wherein he told you that the Shell Oil Company was abandoning all of its efforts to manufacture or sell or exploit or develop any type of core oil, or any other product, for foundry use?

(Testimony of Allan B. Ruddie.)

A. Well, that might be in the letter. I won't say that it was not.

Mr. Aurich: Q. I now show you a copy of a letter dated March 8, 1940, addressed to you and Mr. Peck by registered mail, Return Receipt Requested, which has the typewritten signature attached thereto. I have heretofore shown a copy of the letter to your counsel, and he states that you received the original of that [136] letter shortly after the date it bears. Is that correct?

A. That is correct.

Q. Then you did know long prior to your deposition that was taken in this case, in November, that the Shell Company had expressed its intention of abandoning all efforts to market any type of core oil, is that right?

A. Yes, I received that letter.

Mr. Aurich: For your Honor's information, I will read the pertinent portions. I will read the first paragraph:

"We have recently reviewed the facts concerning our efforts to manufacture and market core oils and other products for related foundry use as disclosed and claimed in the pending applications of Peck and Ruddie subject to the agreement between yourselves and Shell Oil Company dated April 8, 1938. The completely discouraging results of this review have confirmed and enhanced our determination to completely abandon all efforts to manu-

(Testimony of Allan B. Ruddle.)

facture or sell or employ any kind or type of core oil or other products for related foundry uses.”

The letter then goes on and advises these plaintiffs that even as of the date of April 8, 1943, the five-year period referred to by Mr. Hackley in his opening statement, the defendants are not going to proceed with the contract, and I will ask that the letter be received in evidence and marked Defendants’ Exhibit W.

Mr. Hackley: I object to the offer, your Honor, on the ground that this is a document which was written after the filing of this action, and has no bearing upon the issues of this case, and no materiality in connection with it.

The Court: Objection overruled. It may be marked.

(The letter referred to was marked Defendants’ Exhibit W in evidence.) [137]

Mr. Aurich: Q. Mr. Ruddle, did I understand your testimony correctly yesterday to the effect that before the contract between you and Shell was signed, that you made a confidential disclosure of your Core-Min-Oil to Shell?

A. Well, I made disclosures to Shell of a confidential nature regarding all of the discoveries that I made, to Shell, with the exception of how to manufacture the solution. That part of it I gave to Shell after the contract was signed.

(Testimony of Allan B. Ruddie.)

Q. Then the answer to my question is "Yes."

A. Yes.

Mr. Aurich: Q. Now, just in detail, what was the nature of your confidential disclosure to which you referred?

A. That I had found a use for asphalt in the manufacture of core materials, foundry.

Q. You had found it?

A. Yes, I had found the way of using asphalt, asphalt emulsion.

Q. And that is what you meant when you testified that you made a confidential disclosure to Shell?

A. Yes, and how to use it.

Q. That is, in some of the proportions we have discussed before? A. Yes, that is right.

Q. You mentioned a moment ago that you held back the method of manufacturing the solution. Why did you do that?

A. Well, because we were afraid of the Shell Oil Company; we were afraid that they would take our ideas—my idea—and would use it for themselves, and we would not share in the market.

Q. As a matter of fact, Mr. Ruddie, up to the time that you testified on the stand here yesterday, your idea of Core-Min-Oil was that asphalt was something that could be used with your solution [138] which you had theretofore termed a secret solution, is that right?

A. Well, the whole idea was a secret solution. The whole discovery was a secret.

(Testimony of Allan B. Ruddie.)

Q. You mean, now, the whole discovery of the use of asphalt emulsion, together with a secret solution, was secret? A. Yes.

Q. You had not disclosed that to anyone before you went to Shell?

A. Only the Standard Oil Company, is the only people.

Q. How about General Petroleum——

A. We showed the General Petroleum some cores that had asphalt emulsion in them.

Q. We will come to that later.

A. No secret of how we made it, or anything like that.

Q. If you were afraid of Shell, why did you tell them that it had asphalt emulsion?

A. Well, we wanted the Shell to be interested in it, so we had to tell them that it had asphalt emulsion in it; otherwise the Shell would not be interested in it.

Q. And you kept your secret solution a secret until after the signing of the contract, so that no matter what Shell did, they could not make your core oil, is that right? A. That is right.

Q. At the time that you made this alleged disclosure to Shell, did you tell Mr. McSwain, "Now, Mr. McSwain, I have a new core oil. It is composed, broadly, of two ingredients: one is a secret solution, and I am not going to tell you what that is; but the other is asphalt emulsion. Now, I am telling you that asphalt emulsion is used as a secret,

(Testimony of Allan B. Ruddie.)

confidential disclosure to you, and I want you to [139] promise to me that you won't tell anyone about it"?

A. Well, not to tell anyone outside of his company, yes.

Q. You told him that in substance—outside of his company? A. Yes.

Q. And when was that?

A. When I first talked to Mr. McSwain.

Q. On Market Street?

A. Either on Market Street or in his office the next day—yes, on Market Street, that very first time.

Q. And you also told him on Market Street, you said, "Now, Mr. McSwain, when I tell you that my core oil has asphalt emulsion in it, you understand that is a secret and you are not to divulge it to anyone outside of your company"; is that what we are to understand? A. Yes.

Q. How about Mr. Waller? When did you tell Mr. Waller that the secret of your solution was asphalt emulsion?

A. I think the first time that I talked to him.

Q. And you told him, in substance, the same thing that you told Mr. McSwain? A. Yes.

Q. How about Mr. Harsch? Did you ever mention it to him?

A. I think I did, at the same time.

Q. And you told him the same thing?

A. Yes, I know I did.

(Testimony of Allan B. Ruddie.)

Q. How about Mr. Spotswood?

A. I told him the same thing.

Q. And you, in all these conversations, specifically enjoined each and every one of these persons to confidence?

A. That is right.

Q. And told them they could not talk about it outside of the company?

A. That is right.

Q. Why was all this secrecy about the use of asphalt emulsion, Mr. Ruddie?

A. Well, we were afraid the Shell Oil Company, because they were large manufacturers of asphalt emulsion, would find some way of using asphalt emulsion for that purpose, and leave us out [140] of it.

Q. Did you know at that time whether asphalt emulsion had ever been used as a core oil before?

A. I was told by Mr. McSwain at that time that they had never used it.

Q. That is not my question.

I will ask to have the reporter read it, please.

The Court: Read the question, Mr. Reporter.

(Question read.)

A. No, I did not.

Mr. Aurich: Q. You did not know that the use of asphalt emulsion was old in the art?

A. No, I did not; I never heard of it.

Q. You found that out soon after your first conversation with Mr. McSwain, didn't you?

Mr. Hackley: I object to that, your Honor, as

(Testimony of Allan B. Ruddie.)

irrelevant and immaterial to any issue in this proceeding. The question of novelty is not before us.

The Court: He may answer it.

The Witness: Can I have the question again, please?

(Question read.)

A. No, Mr. McSwain said he had never heard of asphalt emulsion being used by——

Mr. Aurich: Q. Do you know now, today, whether the use of asphalt emulsion in a core oil was a new idea with you, or whether it was something that was old in the art?

Mr. Hackley: Your Honor, I object again on the ground that it is irrelevant and immaterial to any issue of this case. The question of novelty is not, under the authorities, an issue in a proceeding of this character.

The Court: The objection is overruled. You may answer. [141]

A. No, I don't know now.

Mr. Aurich: Q. You do not know that now?

A. No, I do not.

Q. Did you ever hear of a patent to a man by the name of Thomas?

A. Yes, I have heard of the Thomas patent, because the Shell bought that patent.

Q. Do you know why they bought it?

A. No, I couldn't tell you why they bought it.

Q. You have no idea on that at all?

A. No, I couldn't tell you.

(Testimony of Allan B. Ruddle.)

Q. You had no discussions with any representatives of the Shell regarding the Thomas patent?

A. Well, it is possible I did, but I don't recall.

Q. The Thomas patent is mentioned in your contract with Shell, isn't it?

A. Yes, but then I couldn't tell you now what was in it.

Q. Do you know what the purpose of putting it in the contract was?

A. Well, Mr. Gratama said it might have a nuisance value of some kind.

Q. Well, Mr. Ruddle, as a matter of fact, don't you know that long before the contract between you and Shell was signed, the Shell Company had made a cursory investigation of the prior art and had found a patent to a man by the name of Thomas, patented in 1925, which claims broadly the use of emulsified asphalt, sand and water, as a core oil?

A. I do now remember that, but I didn't until you mentioned that.

Q. And this patent which I now show you, No. 1,561,956, is the patent to which I refer, is that right?

A. And I never saw the patent until a long time after the contract was signed, as I recall, and I heard Mr. Gratama mention it at that time.

Q. And you heard Mr. Gratama mention it covered the use of [142] emulsified asphalt as one of the ingredients for core oil, is that right?

A. Well, I won't recall what he said about it; he said it was a patent at that time.

(Testimony of Allan B. Ruddie.)

Q. Do you have any idea why you and Shell decided that this Thomas patent to which I have referred should be purchased from the inventor if it could be?

A. I heard Mr. Gratama say it might have a nuisance value of some kind.

Q. That is all you can recall?

A. That is all I can recall.

Q. And you say, "Okay, if you think it has a nuisance value, go buy it"; is that right?

A. That is as I remember it, yes.

Q. You said, "If it has a nuisance value, and you say so, you go buy it and I will pay half of whatever you pay," is that right?

A. Yes, that is right.

Mr. Aurich: I would like to offer in evidence Patent No. 1,561,956, patented November 17, 1925, which has been identified by the witness, and ask that it be marked Defendant's Exhibit X.

Mr. Hackley: May I ask you to state the purpose of the offer?

Mr. Aurich: Yes. The purpose of the offer is to show this witness' statements that he disclosed a secret, anything secret to the Shell Oil Company, when he told them that his solution contained asphalt emulsion, are incorrect.

Mr. Hackley: If your Honor please, I object to the offer on the ground it is irrelevant and immaterial to any pleaded issue of this case, or any issue which can come before your Honor in a proceeding of this character, and I would like to reserve a

(Testimony of Allan B. Ruddle.)

motion to strike this testimony relating to this Thomas patent, and anything relating to novelty, on the basis of authorities which I am prepared to present to your Honor either here or in the course of the briefing of this case.

The Court: Objection overruled. It may be received. [143]

(The patent referred to was marked Defendants' Exhibit X in evidence.)

Mr. Aurich: Q. Just one final question with respect to the Thomas patent, Mr. Ruddle. Can you tell me the first time that you knew that the Thomas patent related to the core oil containing emulsified asphalt? A. Yes.

Q. With respect to the date of the signing of the contract?

A. Well, I would say it was just a few days before the contract was signed.

Q. Now, prior to going to the Shell Company with your Core-Min-Oil, I understand you took your product to the American Bitumuls Co., is that right? A. That is right.

Q. You had quite a few negotiations with that company, didn't you? A. Yes, we did.

Q. Do you recall a survey that they made for you? A. A survey?

Q. Yes.

A. What do you mean by a survey?

Q. Did you ever receive a report from the American Bitumuls Co. regarding the welcome—if

(Testimony of Allan B. Ruddie.)

I may use that term—that your core oil would be likely to receive in the foundries, large foundries in the East? A. I don't recall. [144]

Q. I will come to that a little later, then. Do you know the business of the American Bitumuls Company?

A. It is the asphalt department of the Standard Oil Company. They use the asphalt for road-making, I understand.

Q. And it is a manufacturer of asphalt and asphalt emulsion? A. That is right.

Q. Why did you take your product to them before going to Shell?

A. Because they were a manufacturer of asphalt emulsion, and Mr. Lydell Peck was a friend of Harry Collier, who was the head of the Standard Oil Company—who was vice-president, I think, at that time.

Q. What you tell the American Bitumuls Company was contained in your Core-Min-Oil?

A. We told the American Bitumuls Company that it was an asphalt emulsion.

Q. And what else?

A. A solution—a sodium silicate solution.

Q. Did you tell them what was in the solution?

A. We did not.

Q. Did you enjoin them to secrecy with respect to your alleged disclosure? A. We did.

Q. That you were using asphalt emulsion as a core oil? A. I did.

(Testimony of Allan B. Ruddie.)

Q. You also had some negotiations with the Union Oil Company; is that right?

A. Yes, that is right.

Q. By the way, before we leave American Bitumuls, will you tell me the names of the individuals that you personally enjoined to secrecy from disclosing the idea that an asphalt emulsion could be used as a core oil?

A. Yes; a Mr. Buckley, who was a chemist at the American Bitumuls Company.

Q. What is his first name?

A. I couldn't tell you. [145]

Q. Who else?

A. I think Mr. Bly was one.

Q. How do you spell that?

A. I think it is B-l-y.

Q. What is his first name?

A. I couldn't tell you.

Q. What connection did he have with the company?

A. He went out to Macauley Foundry with Mr. Buckley—

Q. Do you know what his capacity was?

A. No, I couldn't tell you what his capacity was. He is in the sales department, I think.

Q. Sales? A. I think so.

Q. All right. Who else in the American Bitumuls Company did you enjoin to secrecy in the manner you have stated?

A. Mr. Smith, who was president of it and Mr. Mac—I don't remember the last name.

(Testimony of Allan B. Ruddie.)

Q. M-a-c?

A. M-a-c-something; I can't recall what it was.

Q. By the way, in connection with all these injunctions of secrecy or alleged injunctions of secrecy, did you ever write a letter to the American Bitumuls Company telling them that they couldn't tell anybody that asphalt emulsion was used as a core oil? A. No, we just told them that.

Q. Did you ever write any letter to Shell telling Shell, "Now, here, I have told you that you can use asphalt emulsion as a core oil. That is my secret; you can't tell anybody"?

A. No, I don't think we ever wrote letters to anybody; just told them.

Q. You never wrote any letter to anybody along those lines, did you? A. No.

Q. Why didn't you tell American Bitumuls what your secret solution was?

A. Well, we were trying to keep them from making something out of it—out of the discovery—tried to hold as much back as we could in order that we might get [146] into a contract before we told them all of it.

Q. You were holding back what you then considered to be the most important part of your Core-Min-Oil; is that right?

A. Well, together; one isn't good without the other.

Q. You don't consider one more important than the other? A. No.

Q. You consider them both of equal merit?

(Testimony of Allan B. Ruddle.)

A. Yes, that is right.

Q. Now let us go to the Union Oil Company. Oh, before I forget it: Are there any other persons that you enjoined to secrecy that are connected with the American Bitumuls Company?

A. No, that is all I recall now.

Q. Now we will go to the Union Oil Company finally. When did you go to the Union Oil Company?

A. Well, I didn't go to the Union Oil Company. I think Mr. Austin used to work for the Union Oil Company, and he talked to a chemist that he knew in the Union Oil Company, and I think that was the extent of our negotiations with the Union Oil Company.

Q. Then you actually had no negotiations with the Union Oil Company? A. No, that was all.

Q. And you never talked to them at all about it?

A. No, I never did.

Q. You don't know what Mr. Austin told them?

A. No.

Q. Just answer Yes or No, if you please.

A. No, I don't.

Q. Now, you mentioned some negotiations with the General Petroleum Company. Why did you go to the General Petroleum Company?

A. Well, Mr. Olson of the General Petroleum Company came here from Los Angeles, and we took him out to the Macauley Foundry,—Mr. Lydell Peck, Mr. Paul Austin and myself.

(Testimony of Allan B. Ruddie.)

Q. And what was said.

A. And he looked at the product, [147] and expressed himself as being interested in it. And I asked Mr. Olson to treat this as confidential, the use of asphalt emulsion with this solution in the manufacture of cores.

Q. Why was he interested in it?

A. The General Petroleum also made asphalt emulsion too.

Q. Did you tell him what else was in your Core-Min-Oil outside of asphalt emulsion?

A. Only that we used a silica solution.

Q. Did you tell him the ingredients of that?

A. We did not.

Q. You made a very definite effort in all these negotiations with all these individuals, with your work at Macauley's, your work at Vulcan, to make sure that no one knew what was contained in your solution that formed part of your Core-Min-Oil, didn't you?

A. That is the only part that we could keep people from knowing what we used.

Q. My question is, That is what you did?

A. My answer is, It is the only way that we could do it.

Q. I assume that you mean that you did it, and that is the only way you could do it; is that right?

A. That is right.

Q. But you didn't have any objection to people knowing that you were using asphalt emulsion?

(Testimony of Allan B. Ruddle.)

A. Well, we tried to keep it as near secret as we could from people.

Q. Did anyone at Macauley's know that you were using asphalt emulsion?

A. I doubt very much if anyone there did know it.

Q. How did you keep your asphalt emulsion there?

A. I kept it in a can and had a number on it.

Q. No label? A. No label.

Q. It wasn't labeled "Union Oil Emulsion"?

A. No, it wasn't; it had just a number on it.

Q. Nobody at Macauley's knew what your secret solution was? [148]

A. No. I had many cans there, and I doubt very much if anybody knew anything I had there.

Q. How about the Vulcan Foundry? Do you think they ever knew that you were using asphalt emulsion?

A. That was after the Shell Oil Company had taken over the thing; I don't know about whether they told them or not.

Q. The Shell Oil Company, according to the contract at least, took this over about April 8, 1938?

A. That is right.

Q. And you worked at the Vulcan Foundry for a period of at least two or three months before that time?

A. Yes, with the Shell Oil Company.

Q. That is right; with the Shell Oil Company there as an observer; is that right?

(Testimony of Allan B. Ruddle.)

A. That is right.

Q. Mr. Waller was there watching what you were doing; is that right?

A. Well, I would bring the solution there or the Shell would bring the solution there.

Q. Where would they get it?

A. I gave it to them, and they would bring the asphalt emulsion. Generally they would bring the asphalt emulsion and I would bring the solution to Macauley Foundry.

Q. And then you would either make up the mix and make the cores, or have the coremaker make the cores, and Mr. Waller would observe what you were doing? A. That is right.

Q. During that period of time that you were making cores at the Vulcan Foundry with your Core-Min-Oil and Mr. Waller was there observing you, do you know whether or not Vulcan knew that you were using asphalt emulsion?

A. I don't know; I didn't tell anybody there what was in those cans.

Q. What kind of cans did they come in at that time—the asphalt emulsion?

A. Generally just plain gallon cans with [149] no marks on them. I think the Shell emulsion can had Y-104 on it.

Q. And, therefore, it is definitely your testimony that prior to the date of the signing of the contract herein on April 8, 1938 you made a confidential disclosure of your Core-Min-Oil to Shell Oil Company?

(Testimony of Allan B. Ruddie.)

A. I did not disclose it all to the Shell Oil Company prior to April 8.

Q. You made a confidential disclosure of part of it; is that your testimony now?

A. That is right.

Q. No doubt in your mind about that?

A. None at all.

Q. That isn't something that you have just thought up now? A. No, that was——

Q. That isn't something you thought up between the time your deposition was taken less than a month ago and the time you took the stand here today?

A. No. If I had anything else in my deposition, I didn't mean it; I didn't understand your question.

Q. You say you didn't understand my question?

A. Probably if I have anything in there other than that, that I didn't understand your question if I answered differently.

Q. You are ready to say that without knowing what questions I am going to refer to? Can you answer that question?

A. Well, I just assumed that you were going to confront me with some answer that I have made different than my answer now.

Q. Your assumption is correct. I am going to call your attention to a portion of your deposition which was taken on November 10, 1941, less than a month ago. It commences at page 231, line 12, in which I directed your attention to a portion of your

(Testimony of Allan B. Ruddle.)

complaint—I think you may be able to follow what I refer to by just reading the testimony; if not, I would like to [150] have you say so and I will give you your complaint. The question was this,—propounded by me:

“Q. Now, let’s look at paragraph V of this complaint, which is on page 3. In that paragraph you allege ‘that commencing on or about February 1, 1938, and after a confidential disclosure of said product and demonstration thereof to members of the executive personnel of Shell Oil Company’—the Shell Oil Company did certain things. What confidential disclosure did you refer to at that place in your complaint?

“A. Well, that date is wrong.”

Then follows an objection by your counsel, and I said,

“What was your answer, Mr. Ruddle?” And you said “I would say the date is wrong.

“Q. The date, February 1, 1938?

“A. Yes. In January, 1938——”

“Q. Did you ever make a confidential disclosure of your Core-Min-Oil to Shell Oil Company about February 1, 1938? A. No.

“Q. The first alleged confidential disclosure of your product was made to the Shell Company after the signing of the contract here in suit on April 8, 1938, is that right?

“A. That’s right.

“Q. The date of February 1, 1938, appear-

(Testimony of Allan B. Ruddie.)

ing on line 19, page 3, paragraph V; is that correct?

“A. Well, I don’t know what that refers to; it might refer to the information that I gave them regarding making cores and things of that nature. We treated that as confidential.

“Q. And you appreciate, Mr. Ruddie, that this is your complaint, that you read it over very carefully, presumably, and at least subscribed to it before a notary public, and if you don’t know [151] what you meant by your language, somebody else is going to have a rather difficult time in arriving at that knowledge. What I want to find out is what is the confidential disclosure that you made to Shell commencing about February 1, 1938?

“A——” after a little colloquy—“I will say that date was in error.

“Q. That is the date at the place I have referred to on line 19, page 3? A. Yes.

“Q. That should be ‘commencing about April 8, 1938’?

“Yes, that’s right.”

Do you recall that those questions were asked of you and you gave those answers?

A. Yes, that is right.

Q. What is the fact?

A. The confidential disclosure that I referred to there is where I gave them the secret formula—we called it that solution, the manufacture of the solution.

(Testimony of Allan B. Ruddie.)

Q. Then you weren't telling us all of the truth, at least, at the time of the taking of your deposition?

A. I wasn't including the discovery of using asphalt emulsion together with this solution that I took to the Shell Oil Company at that time.

Q. You had forgotten that at the time your deposition was taken?

A. No, I didn't forget it; I didn't understand your question.

Q. Will you now enumerate to me all of the reasons why you took [152] your Core-Min-Oil to the Shell Oil Company.

A. Yes. The reason I took it to the Shell Oil Company was that I wanted to find a market for a product I thought was ready to be put on the market.

Q. Is that all your answer?

A. That is right.

Mr. Aurich: Q. Is that the only reason you took your product to the Shell Company?

A. Well, and also there was a few things in it, such as the gas in the ovens that bothered the core, which I thought that a company that had the laboratories such as the Shell could determine what the cause was.

Q. Anything else?

A. Well, those are the principal things that I took it there for.

Q. Let me be the judge of what the principal things are; just give me your reasons.

(Testimony of Allan B. Ruddie.)

A. Well, the principal reason was to find a market, to find somebody that would sell it.

Q. As a matter of fact, there were three main reasons that you took your Core-Min-Oil to the Shell Company; I will enumerate them for you and you tell me if I am not correct: The first, not necessarily in order of importance but first in sequence, is that you knew that the Shell Oil Company manufactured an asphalt emulsion, and you thought that was a likely outlet for your Core-Min-Oil; is that right? A. That is right.

Q. The second was that you knew Floyd McSwain, manager of the asphalt department; is that right? A. Yes.

Q. And the third was that you wanted to secure the assistance of the Shell Oil Company in helping you solve this difficulty you were encountering in the softening of the cores; is that right?

A. That is right. [153]

Q. Those were the three major reasons why you went there? A. That is right.

Q. Do you know what the usual and accepted ratio of sand to oil is when foundries are making cores with linseed oil?

A. Well, they run as high as one part of oil up to eighty parts of sand.

Q. That would be one of oil to eighty of sand?

A. That is right. The Kingwell Foundry that uses Quandt Oil uses one to fifty parts of sand.

Q. What is the ratio of sand to oil used by you in the making of cores with Core-Min-Oil?

(Testimony of Allan B. Ruddle.)

A. It is—I can give you that formula; it is 1750 cc's of sand and 80 cc's of asphalt emulsion and 50—

Q. How many parts of sand would you use to how many parts of oil when using the Core-Min-Oil? Is 1 to 17½ about right?

A. Yes, something like that.

Q. One to 20?

A. Well, yes, that would be right.

Q. Never over 1 to 20?

A. No, I wouldn't think so.

Q. Probably less?

A. Well, it would depend on what you had to make. If you had to make a core that didn't require so much strength, it would be 1 to 20.

Q. That is a fair range, Mr. Ruddle?

A. Yes, that is right.

Q. Can we say that you would use one part of More-Min-Oil to 15 to 20 parts of sand?

A. That would be right, I guess.

Q. In other words, if we take the highest ratio given by you, it would take approximately four times as much Core-Min-Oil to mix with a given batch of sand as it would with linseed oil when they were using the ratio of 1 to 20?

A. Yes; I would think an average of 3 to 1 is what we figured.

Q. Three to one would be a fair average?

A. Yes, I would say [154] so.

Q. In other words, the foundry would have to buy three times as much Core-Min-Oil to get the

(Testimony of Allan B. Ruddie.)

same beneficial results that he would with one part of linseed oil?

A. That is right. I think linseed, though, is used also from 1 to 50; it depends on the work that they are doing.

Q. You figured roughly 3 to 1 is a good average?

A. That would be about an average, I would say.

Q. You have mentioned something in your direct testimony about an allegedly new product that Mr. McSwain mentioned the Shell Company had developed, or that they had in the way of core oils, and I believe you identified that allegedly new product as an albino linseed, is that it?

A. An albino asphalt.

Q. Albino asphalt?

A. Yes, together with a mix of linseed oil, some kind of a mix of linseed; it wasn't pure linseed, as I understood him to say.

Q. In other words, they take this albino asphalt and mix it with the linseed oil; is that your understanding?

A. That is what he told me that day.

Q. I am not quite sure of your testimony in this regard, and it isn't clear to me; but did I understand you to say or to intimate that the Shell Company refused to disclose the formula for making this albino linseed core oil? A. We—

Mr. Hackley: Do you mean albino asphalt?

(Testimony of Allan B. Ruddle.)

Mr. Aurich: Albino asphalt, whatever you want to call it; I will accept your terminology.

A. Well, I understood they refused; I didn't ask them for it.

Q. You understood they refused?

A. Yes, we asked for reports all the time, which we didn't get.

Q. You never got them?

A. No; we got the two reports, and [155] that is all we got until after the complaint—I mean this letter from Mr. McLaren came.

Q. Do you know when they developed this albino asphalt oil?

A. It was just prior to the McLaren letter; that is the time that McSwain told me.

Q. That would be July 1939?

A. Yes, I would say something like that.

Q. Did the Shell Company ever tell you what ingredients were in the albino asphalt oil?

A. No, they did not.

Q. They never told you anything about it?

A. No, only McSwain said one time that the asphalt was some asphalt that had been manufactured in Holland, or something like that, something that they tried.

Q. Mr. Ruddle, as a matter of fact, didn't the Shell Oil Company disclose to your counsel orally and generally the nature of albino asphalt oil that you referred to, and wasn't that conversation subsequently followed up by the Shell Company writing a letter in which they set forth with great de-

(Testimony of Allan B. Ruddie.)

tail the ingredients used in making this albino asphalt, and the method by which it was made?

A. Not to my knowledge.

Q. Don't you recall that some discussions were had at the time or around the time of the cancellation about this albino asphalt, and Shell kept insisting that it had nothing to do with anything that you had disclosed to them and that it was entirely different; and that those discussions resulted in your taking the position: "Well, how can we tell whether it is different or whether it is the same or whether you have taken anything from me until we know what is contained in it"? Don't you recall anything like that? A. No, I don't.

Q. And don't you recall that Shell acquiesced in the wisdom [156] of your position and said, "Well, that's right; here is the formula we use. Here are the ingredients we use. Now you can take it and submit it to anybody you want and get their opinion on it."? You don't recall anything like that? A. I do not.

Mr. Aurich: Mr. Hackley, you will admit that the original of this letter was received (showing letter to counsel)?

Mr. Hackley: That letter was received by me as a matter of fact on behalf of Mr. Ruddie and of Mr. Peck.

Mr. Aurich: Yes, that is right.

Mr. Hackley: You may offer the copy, if you like, without any further identification.

(Testimony of Allan B. Ruddle.)

Mr. Aurich: Q. I now show you a copy of a letter dated November 30, 1939, which is admitted to be a copy, the original of which was received by your counsel, Mr. Hackley, and ask you to look at it, please, and read it over and see if you ever saw that before (handing document to witness).

A. I don't recall ever seeing this letter before.

Q. And you were never advised that the Shell Oil Company had told your counsel what the ingredients were that were used in making the albino asphalt oil referred to by you and the formula?

A. No, I don't recall that at all.

Q. You didn't know anything about it until I showed it to you here today; is that right?

A. That is true.

Mr. Aurich: I now ask that the letter be received in evidence as Defendants' Exhibit Y, being a copy of a letter dated November 30, 1939, from Shell Oil to Mr. Hackley.

Mr. Hackley: I have no objection to the form, but I object to the offer on the ground that it is irrelevant and immaterial to any issue in this case for the reason that the letter was [157] admittedly sent and received after the filing of this action.

The Court: Let it be admitted and marked.

(The letter referred to was marked Defendants' Exhibit Y in evidence.)

Mr. Hackley: Mr. Aurich, for your information, if it will be helpful to you, I can say that I

(Testimony of Allan B. Ruddie.)

personally received that letter and referred it to Mr. Peck, not to Mr. Ruddie.

Mr. Aurich: Thank you.

Q. Now, when you took your Core-Min-Oil to the Shell Oil Company and discussed the matter with Mr. McSwain, did you tell him anything about the difficulties you had been experiencing with your Core-Min-Oil? A. Yes.

Q. Will you tell me what you told him in that regard, please?

A. Well, I told the Shell Oil Company we were having trouble with this softening in the ovens.

Q. Yes.

A. That was afterward determined to be due to gas; and we also told them that we were having trouble with the material drying on the benches badly; that we were able—if we kept wet sacks on it, why, we could use it on the benches, or if we put it in a container. And I described the chute that was made at the Kingwell Foundry where they put the material in on the outside and it came down and opened up on the benches, and if used that way it would eliminate the fast drying time on the benches.

Q. Anything else?

A. Well, they were the principal things that I recall now.

Q. Well, let me put it to you this way: Are those the principal things that you recall, or are those the only things you recall now?

(Testimony of Allan B. Ruddie.)

A. Well, those are the only things that I can recall right now. [158]

Q. In other words, you told Mr. McSwain, "I have got a pretty good core oil here. It seems to have tremendous possibilities, but I am having a little difficulty. First, I am having difficulty because on occasions some of the cores are soft while others are hard. That I can't seem to overcome and I don't know what causes it. And I am also having a little difficulty because the sand has a tendency to dry fast on the bench, but I can overcome this by placing wet sacks over the sand or keeping it in airtight container."? Is that about right? A. That is about right.

Q. On page 48 of your testimony yesterday, Mr. Ruddie, you mentioned something about some other minor difficulties that were going to be corrected. I think that is your testimony. Can you tell me what the other minor things that were going to be corrected were that you mentioned to Mr. McSwain?

A. I can't recall them at this time.

Q. You can't recall any at this time?

A. No.

Q. Do you recall at this time whether there were any or not?

A. No, I can't. There might have been.

Q. And there might not? A. Yes.

Q. Now, also yesterday you mentioned something in your testimony—I don't have the exact page—about the fact that you turned over every-

(Testimony of Allan B. Ruddle.)

thing that you had been able to learn with reference to core-making, et cetera, to Shell. Do you recall that testimony particularly?

A. Yes, that is right.

Q. Did you mean by that to testify that you had turned over to the Shell Company all your notes relating to the art or subject of core-making?

A. Well, everything that seemed important [159] that I—everything that I knew that would aid them in any way I turned over to them.

Q. Well, did you turn over to the Shell Company all of your notes that you had made at the time that you entered into this contract?

A. Well, as I recall, I did. I don't find them; I don't know; maybe they are still there.

Q. Don't you recall testifying at your deposition that at the time you entered into the contract with Shell you thought everything was all right and you destroyed your notes?

A. I said I might have.

Q. You think you said you might have?

A. Yes. [160]

Q. When was the first conversation you had with Mr. McSwain when the alleged probable size of the core oil market was discussed?

A. Well, I would say that it was within the very first meetings that I had with him.

Q. That would be in the fore part of, let us say, January, 1938?

A. Yes, I would say that would be about the time.

(Testimony of Allan B. Ruddle.)

Q. Who first brought up the subject of the probable size of the core oil market, you or Mr. McSwain?

A. Well, maybe I did; I wouldn't know.

Q. Did Mr. McSwain at that time tell you that the Shell Oil Company had looked into the market of core oils, and that the market of core oils was in the neighborhood of 23,000,000 gallons per year?

A. No, I don't know that he did at that time.

Q. Did he tell you that during your first negotiations, or during the months of January or February, 1938?

A. It might have been as late as February in 1938.

Q. Did he tell you that in February of 1938—and by that, I mean, did he tell you any time prior to the signing of the contract here in evidence—that the Shell Oil Company had made an investigation of the probable core oil market in the United States, and found that that market was approximately 23,000,000 gallons a year?

A. I won't attempt to fix the time when he first told me that.

Q. Can you say whether or not he told you that prior to the signing of the contract or after the signing of the contract?

A. Well, it might have been after the signing of the contract. [161]

Q. Are you sure?

A. I wouldn't be sure.

Q. Now, at those early conversations that you

(Testimony of Allan B. Ruddie.)

had with Mr. McSwain in January or February, 1938, he told you that the Shell Oil Company had never been in the core oil business, is that right?

A. That is what he told me.

Q. And he told you either in your very first, or among the very first meetings, that he personally knew nothing about core oils, is that right?

A. That is right.

Q. When you met Mr. McSwain on Market Street, as you have testified, and mentioned the subject of core oils to him, what was his immediate response?

A. Well, he was interested.

Q. He was interested without knowing what a core oil was?

A. Well, he said that his company would be interested in any product of theirs that there would be a new market for—any product.

Q. Did he ask you, "What is a core oil?" Didn't he ask you that question?

A. Well, it is possible that he did.

Q. You have no recollection of that?

A. Well, as I remember, I told him—and I told him that we had—that I had discovered a new use for asphalt, and that I wanted to know if his company would be interested in it. And he said that his company was interested in anything in the way of their products, where there was a new sale for them.

Q. Following that conversation, or subsequent to what you have just told us, did you tell Mr. Mc-

(Testimony of Allan B. Ruddle.)

Swain that your new market for asphalt, or asphalt emulsion, which ever the case may be, was in the use of a core oil?

A. Well, yes, I think it was at the first meeting, but I won't recall—I remember when I first told him about what it was, an asphalt emulsion.

Q. As a matter of fact, the situation was this, wasn't it, Mr. [162] Ruddle: that you told Mr. McSwain that you had a new market for asphalt emulsion; that that new market was in the field of core oils, and Mr. McSwain either asked you, "What do you mean by core oils?" And you explained to him, or you explained it to him without his asking you, is that right?

A. That is possible, yes.

Q. Mr. McSwain did not know what a core oil was before you met him, did he?

A. No, he did not.

Q. Instead of Mr. McSwain telling you the probable market of core oils for linseed oil, isn't it a fact that you told him that the probable market of core oils, for linseed oil, was approximately 23,000,000 gallons per year, and didn't you tell him that in order to interest him and the Shell Oil Company in taking and participating with you in your core oil project?

Mr. Hackley: This is before the contract?

Mr. Aurich: Before the contract was signed.

A. Yes, as I understand, this is the first meeting or two you are referring to.

(Testimony of Allan B. Ruddie.)

Q. Either the first, second or third—any meeting you want to place.

A. Yes, I guess that is probably true, that I told him.

Q. And didn't you tell Mr. McSwain at one of those early meetings that you had with him that it took three times as much Core-Min-Oil to make a given batch—to mix with a given batch of sand—as linseed oil, and that therefore you would sell three times the amount of linseed oil that was then being sold?

A. Well, that is what we had in mind. I suppose I did tell him at that time.

Q. Well, do you have any recollection now whether you did or did not tell him that?

A. No, I have not.

Q. You spoke about a letter that you received from "The Foundry," [163] the other day. Do you recall that?

A. Yes; I remember turning that letter over to Mr. McSwain.

Q. And you did not say anything to him when you turned that letter over to him? You just said, "Here is a letter," and that is that?

A. Yes. We not only had that letter; we had other pamphlets from the Government—I think the Department of Commerce.

Q. What I am driving at is this: Mr. McSwain knew nothing about how much Core-Min-Oil could be sold in comparison with linseed oil during your early conversations with him, did he?

(Testimony of Allan B. Ruddie.)

A. No, I don't think he did.

Q. The only knowledge he could have obtained outside of surveys he might have made, would have been from you or from Peck, isn't that right?

A. I guess that is right.

Q. Will you just answer this question directly, please: At any time prior to the signing of the contract on April 8, 1938, did you tell him that you had made a survey, or had had an investigation made, or words to that effect, and that you had discovered that there was 23,000,000-odd gallons of linseed oil sold for core oil purposes in the United States; that you would sell three times as much Core-Min-Oil as linseed oil; and that therefore there was a probable market of some 69,000,000 gallons of Core-Min-Oil?

A. That is possible, that I did.

Q. Did you tell Mr. McSwain at any of these early conversations that you contemplated that your oil was of sufficient quality that you expected that it would supersede all core oils on the market, to a large extent?

A. I don't know that I said "all core oils." We were talking about the linseed oil market; that was the only one we had any figures on.

Q. Did you tell Mr. McSwain that you contemplated that your Core-Min-Oil was of sufficient quality that you expected it would [164] supersede all the linseed oil that was then on the market?

A. No, I don't know that I made that statement.

(Testimony of Allan B. Ruddle.)

Q. You were not trying to sell Mr. McSwain the idea of becoming interested in your Core-Min-Oil at all, were you? A. I certainly was.

Q. You were not trying to tell him what a market there was for it, were you?

A. It is possible I told him, but I don't recall now what I told him.

Q. As a matter of fact, before you ever went to Mr. McSwain and ever went to the Stell Oil Company, you had determined, to your satisfaction, at least, and to the satisfaction of Mr. Lydell Peck, what, in your opinion, you considered to be the probable market for your Core-Min-Oil, is that right?

A. That is right; that is right.

Q. What was the probable market that you and Mr. Peck had considered was there for your Core-Min-Oil before you went to Shell?

A. That was based upon that "Foundry" letter and the pamphlets that we got from the government regarding the amount of core oils that were used.

Q. Can you tell me how many gallons of Core-Min-Oil you considered there was a probable market for, which conclusion had been arrived at by you prior to the time you went to Shell?

A. About 70,000,000 gallons a year.

Q. 70,000,000 gallons a year? A. Yes.

Q. Now, how did you arrive at that figure of 70,000,000 gallons a year?

A. Well, we figured that there was about 23,-

(Testimony of Allan B. Ruddie.)

000,000 gallons or more of linseed oil, and that we would use three times as much in Core-Min-Oil, and that was how we arrived at that figure.

Q. And it is quite possible you passed those figures on to Mr. [165] McSwain?

A. Well, I know that we sent a "Foundry" letter we had—that was one of our guiding methods—over to the Shell Company.

Q. I am speaking of the 69,000,000 or 70,000,000 gallon figure.

A. Well, that was Core-Min-Oil, and the letter we sent was on linseed.

Q. The point is, it is quite likely that you advised Mr. McSwain of what you considered to be the probable market for Core-Min-Oil, based upon the figures that you just testified to?

A. Yes, that would be probably right.

Q. Now, you have testified here that you have arrived at the alleged fact that you have been damaged in excess of \$100,000 because Mr. McSwain advised you that the market for core oils in the United States was 60,000 gallons a year, and that it was reasonable to expect that your Core-Min-Oil would take, conservatively, 10 per cent of the market, is that your testimony?

A. 60,000,000 gallons a year.

Q. 60,000,000 gallons a year; I am sorry.

A. Yes, that is right.

Q. You are quite sure of that fact, are you, Mr. Ruddie?

A. Yes, sir.

Q. No doubt in your mind about it?

(Testimony of Allan B. Ruddle.)

A. No. I remember that conversation with McSwain where we were discussing the probable amount that should come out of the sale of Core-Min-Oil.

Q. You are quite sure that this conversation that you are referring to with Mr. McSwain, the substance of which I have related in one of my preceding questions, is the basis for your statement in your complaint that you have been damaged in the minimum amount of \$100,000, is that right? A. That is right.

Q. As a matter of fact, Mr. Ruddle, that figure of \$100,000 which [166] is set forth in your complaint is an arbitrary figure set down by you and is based solely and only on the hope and expectation that, assuming there was 23,000,000 gallons of linseed oil sold per year, you would be able to sell approximately 69,000,000 gallons per year, is that correct?

A. I wouldn't need to sell it?

A. You mean the Shell Oil Company would sell that much?

Mr. Aurich: Q. I do not mean the Shell Oil Company at all. I mean anybody that sold your product.

A. Yes; that is what we would expect them to sell, or more.

Q. Are the figures stated in my question correct or incorrect?

A. Yes, they are correct.

(Testimony of Allan B. Ruddie.)

Q. Your statement in your complaint that you have been damaged in the sum of \$100,000, then, is not based entirely on what Mr. McSwain told you, is it?

A. Yes, that was one of the outstanding things that was in my mind when we talked about it.

Q. When did you come to the conclusion the fact that you have been damaged in the amount of \$100,000, or in excess of \$100,000, was due to this statement of Mr. McSwain's, that they would sell 60,000,000 gallons a year?

A. That was only one of the elements of it. We knew the size of the market.

Q. Who is "we"?

A. Well, Mr. Peck and myself.

Q. You knew that before you went to Shell?

A. We knew that, and we also knew it after we went to Shell Oil Company. Mr. McSwain said that he had an independent search made, and that our figures were not out of line. [167]

Mr. Aurich: Q. Was that always in your mind, Mr. Ruddie?

A. Yes, we always discussed that, a number of times, Lydell Peck and myself.

Q. That is not a matter that has come to you as an afterthought, is it? A. No, sir.

Q. I will call your attention to your deposition, which was taken less than a month ago, on November 10, 1941, commencing on line 20 of page 226, in which substantially the identical question that was asked you yesterday by your coun-

(Testimony of Allan B. Ruddle.)

sel was asked you by me. The testimony reads:

“Q. In paragraph 24 of your complaint, verified by you, page 11, lines 24 to 26, you allege that you have been damaged and injured in an amount in excess of \$100,000. Will you tell me how you arrived at the amount of said alleged damage as therein set forth?

“A. That was an arbitrary figure that we placed in there.

“Q. Who is ‘we’?

“A. Mr. Peck and myself. Mr. Hackley, who we discussed that with—he told us that that figure didn’t mean anything; that if the amount we could show we were damaged was a million dollars, that figure would not be limited to \$100,000.

“Q. Let me put it this way: Do you figure you have been damaged at least in the amount of \$100,000?

“A. Yes, I think many times as much.

“Q. How did you arrive at that figure?

“A. Well, we, with the Shell Oil Company, and even prior to the Shell Oil Company entering into it, we determined the size of the linseed oil market.

“Q. What was that size?

“A. It was 23,000,000 gallons a year. [168]

“Q. That is, the 23,000,000 gallons per year of linseed oil was sold for foundry use?

“A. Yes.

“Q. How did you get that information?

(Testimony of Allan B. Ruddle.)

“A. We had that in a letter from the magazine called ‘Foundry’.

“Q. I show you what purports to be a copy of a letter from ‘The Foundry,’ dated November 26, 1937, addressed to Mr. Peck, that your counsel, Mr. Hackley, offered in evidence as Plaintiff’s Exhibit 2 in the taking of the deposition of Mr. McSwain, and ask you to state if that is the letter to which you have reference?

“A. Yes, that is the letter I refer to.

“Q. That latter is dated November 26, 1937.

“A. Yes, that is right.

“Q. That is before your first conversation with Shell relative to the core oil?

“A. That is right.

“Q. Now, assuming that the information stated in that letter is correct, in that there are 23,000,000 gallons of linseed oil sold to foundries for core oils, how did you arrive at the figure you were damaged in the extent of at least \$100,000?

“A. Well, we would do approximately three times as much.

“Q. That would be 69,000,000 gallons each year? A. Yes, that would be.

“Q. How did you arrive at the figure that that would be 69,000,000 gallons per year of your Core-Min-Oil, and by 69,000,000 gallons you mean 69,000,000 gallons of Core-Min-Oil, and not the Ruddle Solution alone?

“A. No; that would be together.

(Testimony of Allan B. Ruddie.)

“Q. The combined Ruddie Solution and asphalt emulsion together?

“A. Yes, I think so. [169]

“Q. How did you arrive at the figure, then, of 69,000,000 gallons per year that you would sell?

“A. Well, in our talks with the Shell Oil Company, we talked figures of 10,000,000 gallons a year, of 20,000,000 gallons a year, and they estimated, when they talked to us about it, that they could sell at least 50 percent of the foundries, 50 percent of that amount. We talked those figures. It is an estimate.

“Q. Irrespective of what Shell may or may not have done, or what Shell may or may not have told you, how did you arrive at the figure of 69,000,000 gallons per year as representing the amount of Core-Min-Oil that could be sold?

“A. Other than this letter?

“Q. No; I am trying to figure out how you figured you could sell three times the amount of the total gallonage of linseed oil that was sold?

“A. I said if we supplanted the linseed oil market, it would require 69,000,000 gallons of Core-Min-Oil.

“Q. What was there in the course of events that made you believe you would supplant the entire linseed oil market in the core oil field?

“A. Well, we never figured we could sup-

(Testimony of Allan B. Ruddie.)

plant it, but we figured about 50 percent of the market.

“Q. In other words, you merely hoped that you would be able to supply at least 50 percent of the market with core oil that was then using linseed oil? A. That is right.

“Q. It was your hopes and expectations, rather than anything else?

“A. [170] That is right.

“Q. You had no factors upon which that was predicated?

“A. No, just our opinion, our judgment in the matter.

“Q. By ‘our judgment,’ whose judgment do you mean?

“A. I mean Mr. Lydell Peck, myself, Mr. James F. Peck, who was alive at that time.”

Q. I will show you the portion I read, and you are at liberty to read that and all other portions you desire. A. Yes, I recall it.

Q. Those questions were asked of you and you gave those answers, did you not?

Mr. Hackley: May I give the record to the witness so he may read the whole dissertation? I believe he should read all of it.

Mr. Aurich: He may read the entire deposition if he wants to, Mr. Hackley.

Mr. Hackley: I thought he might want to read the rest of the same subject. It appears on pages 229 and 230.

(Testimony of Allan B. Ruddle.)

Mr. Aurich: Q. After you have read that, my question, Mr. Ruddle, is: Were those questions asked you and did you give those answers?

Mr. Hackley: I will stipulate that those questions were asked and he answered them in the manner which you read, Mr. Aurich.

Mr. Aurich: Thank you.

Q. Prior to your going to the Shell companies with your core oil, did you ever make an investigation, or study, or survey, to determine the amount of core oils that were being sold on the market, other than this letter from "The Foundry," to which you have referred?

A. Yes, we had some pamphlets that we got from the Government. They were only loaned to us, and we had to return them. [171] But I sent them over to the Shell Oil Company—we had them that long—and Mr. Waller returned them to us.

Q. What else did you do in connection with such an investigation, or study, or survey?

A. Well, we tried to determine the amount of Core-Min-Oil that was used in Chrysler's plant.

Q. Of Core-Min-Oil?

A. No; linseed oil, I think—or I have forgotten what the oil was that they used. I think it was linseed oil that they used in Chrysler's at the time.

Q. Did you find out?

A. Yes; I think we did, but I think I turned that over to Mr. Waller.

Q. When was that survey made, or investigation, regarding the Chrysler plant?

(Testimony of Allan B. Ruddie.)

A. Well, it was along about the time that the Shell Company had signed the contract, somewhere in there; I don't know just when.

Q. Prior to the signing of the contract?

A. I would say maybe after signing the contract.

Q. Do you recall what the figures were?

A. No. As I recall, they were about four or five million gallons used a year there.

Q. By Chrysler? A. Yes.

Q. Linseed oil, for core oil purposes?

A. That is what I think the survey showed, but I don't remember now just how we got it.

Q. Do you remember where you got that information from?

A. No, I do not; I couldn't tell you.

Q. Outside of the letter or report from Chrysler that you have referred to, outside of the letter from "The Foundry," and outside of these Government publications, did you make any other investigation or study, or survey, to determine the amount of core oils that were then being sold on the market?

A. No; Mr. McSwain told me that the Shell Company had made one. [172]

Q. I am speaking of prior to your going to Shell. A. No.

Q. Prior to your going to Shell Oil Company did you ever have anyone make such a survey or study for you?

A. No, none other than I have related.

(Testimony of Allan B. Ruddle.)

Q. I am excluding from my next questions those subjects you have already referred to. Do you know whether anyone, prior to your going to shell, and in connection with your core oil, Mr. Ruddle, ever made any survey, or study, or investigation, to determine the amount of core oils that were on the market?

A. No, I do not.

Q. No one ever reported to you the results of any such survey or investigation or study?

A. As to the amount of all core oils that were sold?

Q. Limit it to linseed, if you prefer.

A. No, I don't recall any others that I have related to you.

Q. No one ever reported anything to you about that fact?

A. No.

Q. Do you know whether or not the American Bitumuls Co. ever made an attempt to ascertain the probable size of the core oil market?

A. Not that I recall now. It is possible that they did, but I wouldn't recall.

Q. Weren't you advised by the American Bitumuls Co. that they had made a preliminary survey of the core oil market, and that at the outside the entire core oil market in the United States would not exceed 10,000,000 gallons per year, which was an extremely generous estimate?

A. No, I do not remember that.

Q. You were never advised of that fact?

A. No, I don't think I ever saw that.

(Testimony of Allan B. Ruddie.)

Q. You never saw a report that the American Bitumuls Co. sent you containing information substantially as I have stated it here?

A. No, I don't recall it. [173]

Q. Did you ever see a report from the American Bitumuls Co. to the effect that the introduction of a new core oil into the foundry field would be a most difficult undertaking, irrespective of the merits of the core oil?

A. No, I don't know that.

Q. I didn't ask you whether you knew it; I asked you whether you ever received a report from the American Bitumuls Co. which so stated.

A. I know I don't recall any such report. I know the American Bitumuls Co. offered us a contract.

Q. You have no knowledge of any report like that?

A. No, I have not.

Q. You never at any time disclosed to the American Bitumuls Co. the full composition of your Core-Min-Oil, did you?

A. No, I did not.

Q. Did you ever make a survey or investigation yourself, or have one made for you, to determine what market, if any, there was for a sodium silicate base core oil such as Core-Min-Oil?

A. No, I did not.

Q. Before you could use your Core-Min-Oil in any commercial foundry, it would first be necessary for them to rebuild or remodel their furnaces and change them from direct-fired ovens to indirect-

(Testimony of Allan B. Ruddle.)

fired ovens, assuming they were using direct-fired ovens, isn't that correct?

A. They would have to fix it so the gas would not come in contact with the cores.

Q. To do that they would either have to rebuild or remodel their ovens to change them from direct to indirect, is that right?

A. Or line their ovens with tin, would do it.

Q. Or lining their ovens with tin?

A. Yes.

Q. And having flue gases going out between the tin and the outer walls?

A. Yes, that is right.

Q. What would you do for exchange of heat?

A. What do you [174] mean by "exchange of heat"?

Q. How would you get sufficient heat in the oven?

A. Well, there might be a little loss of heat; I don't know how much.

Q. You do not know whether it would be sufficient to necessitate the placing of heat exchanges in there, do you?

A. No.

Q. At any event, if a foundry had a direct-fired oven today, it would not be able to use your Core-Min-Oil unless it made some alterations of some character in its furnace, is that right?

A. Yes; they would have to have something, either put a cap over the cores to keep the gas away from it, or they would have to fix the oven so the gases could not come in.

Q. Did you say put a "cap" over the cores?

(Testimony of Allan B. Ruddle.)

A. Yes; put a hood over the cores.

Q. Is that a practical operation?

A. Well, it would be, I would think.

Q. In commercial foundry operations?

A. Well, I don't know whether or not that would be the way to fix it, but it is possible to do that.

Q. And you think that that would be a successful, practical, commercial foundry operation, to have a series of hoods for each shape of core that you cared to make, and have the core maker take the time, after the core was made, to place the hood over the core, take it, put it in the oven, have it come out of the oven, and the problem of removing it?

A. Well, if they didn't make little shelves—that is, so that they could isolate the gas from the cores by fixing—most of these foundries have little shelves where they put the thing in. They could fix those so the gas could not get out.

Q. Do you think it would be a practical commercial operation for a [175] foundry—in conducting a foundry, to hood the cores as I have described?

A. I don't know anything about that.

Q. You do not know anything about it?

A. No, I wouldn't know.

Q. What would you do with the steam that was generated within the cores?

A. That goes out the top. If you put a little hole

(Testimony of Allan B. Ruddle.)

in the top of the hood, why, the steam would pass out of the top of the hood.

Q. Do you think you would have any trouble getting sufficient heat to the core?

A. We have tried it with hundreds of them and we didn't have.

Q. No trouble at all?

A. No; they bake just as fast under that hood as they do outside of the hood.

Q. Is it your testimony in that regard, Mr. Ruddle, that you made cores in a furnace, in an oven, a direct-fired oven, and had cores therein which were hooded, and that you got equally satisfactory results as you did when you baked cores in an oven which was free from the CO₂ gases, such as an electric oven?

A. Yes, as near as I could tell there wasn't any difference in the time.

Q. And that was universally true?

A. Yes, it was.

Q. Irrespective of the type of hood used?

A. Well, we just used a cut-up tin, five-gallon can, and set that over it. Now, it is necessary to put sand around the bottom of that hood to keep the gas out, and then just one or two small holes on top of the can that lets the steam out.

Q. Where did all this take place?

A. It took place at the Macauley—I mean, the Vulcan Foundry.

Q. Who did it?

(Testimony of Allan B. Ruddie.)

A. Well, I put many a hood on myself, when we were at the Vulcan Foundry, when Mr. Spotswood was there, and Mr. Waller was there.

Q. Over what period of time?

A. Well, it went over [176] several months that they were there at the Vulcan Foundry.

Q. I am going to be a little more exacting in the question of time, Mr. Ruddie, than your counsel was. You told me this morning, I believe, that you do not recall anything that Mr. Spotswood ever did at the Vulcan Foundry prior to the signing of the contract on April 8, is that right?

A. Yes. Well now——

Q. Is that still your testimony?

A. Yes, that is right.

Q. Therefore, we can start out with the premise that prior to April 8, 1938, Mr. Spotswood did not make any cores at the Vulcan Foundry in which the cores were either hooded or not hooded, is that right?

A. That is right.

Q. When Mr. Spotswood came to work at the Vulcan Foundry following the signing of the contract of April 8, just how much work did you have to do there?

A. Me? Why, I didn't do very much of anything. I mixed a lot of the core sand, and the core maker, Manuel, would make the cores, and we would take them, put them in the oven, and we would put a hood on them, and there they were cooked.

(Testimony of, Allan B. Ruddie.)

Q. As a matter of fact, after the signing of the contract of April 8, the bulk of the work done at the Vulcan Foundry was done there by Mr. Spotswood or the core maker, is that right?

A. That is right.

Q. Practically, the work was under Mr. Spotswood's direction, was it? A. That is right.

Q. The Shell Oil Company was at that time of the opinion that they had a good, marketable core oil; that Mr. Spotswood went to the Vulcan Foundry for the purpose of getting comparative sales data for sales promotion work; do you know that?

A. Yes.

Q. And therefore he was doing the work and you were acting, really, as an observer. Is that fairly accurate?

A. That is true; [177] that is true.

Q. And you were not there every day?

A. No; I went there several times a week; probably once or twice a week. I went with Mr. Waller.

Q. You practically ceased working at the Vulcan Foundry after Mr. Spotswood took the work over?

A. Well, he took the work over, but I went out with Mr. Waller and watched it every day or two.

Q. For how long?

A. Well, it was kept up to the time of the Spotswood application for patent—went in.

Q. You were present at Mr. Waller's deposition the other day? A. Yes.

(Testimony of Allan B. Ruddie.)

Q. You heard him say he left that work on core oil sometime in the middle of June, 1938?

A. Well, after he left I went over with Mr. Lydell Peck, and I went over with Mr. Floyd McSwain a great many times.

Q. Let us divide this up in some periods of time here and see if we can arrive at some conclusion. The first interval of time that Vulcan was occupied by you and Mr. Waller. I am speaking now of the time that you first brought your Core-Min-Oil to Shell, up to the signing of the contract.

A. Yes.

Q. Is that correct? A. Yes.

Q. During that period of time you were doing the work and Mr. Waller was observing, is that right?

A. Well, yes; I would take the material there—that is, the solution I made up—and the core maker, Manuel, would make the cores.

Q. I will put it another way, then. I did not mean to mislead you there. The work at the Vulcan Foundry, between the time you first went to Shell and the time of the signing of the contract, was done at the Vulcan Foundry either by you or under your supervision and [178] direction, and Mr. Waller was merely observing, is that right?

A. That is right. [178-A]

Q. Now let us confine ourselves for the moment to just that period of time. Did you make any cores in a direct-fired oven at the Vulcan during that period of time, which were hooded? A. Yes.

(Testimony of Allan B. Ruddie.)

Q. When did you first commence to do that?

A. Well, it was during the time that I would take the stuff—I mean the material—to the Vulcan and Manuel would make the cores. After Mr. Spotswood had determined what was hurting the cores, then we put the hoods on them.

Q. In other words, after Mr. Spotswood had discovered that it was the presence of carbon dioxide gas in the oven, you commenced to continue to make cores at the Vulcan Foundry, and in an endeavor to overcome this difficulty you started using hoods for your cores?

A. Yes, we did use hoods there at the Vulcan Foundry.

Q. And during that period of time now, which we can fix as the latter part of February 1938, because that is the approximate time when Mr. Spotswood discovered this difficulty, and the date of the signing of the contract, every core made by you in the Vulcan Foundry in a direct-fired oven with a hood placed over the fire was a satisfactory core?

A. Yes, every one that I saw.

Q. Now let us take the next period of time, between the signing of the contract and the middle of June 1938 when Mr. Waller went out of the picture. Is it your testimony that during all of that period of time each and every core made by you with Core-Min-Oil and that was placed in the direct fire ovens at Vulcan and hooded was a good, satisfactory core?

A. Every one that I saw, yes.

(Testimony of Allan B. Ruddie.)

Q. Now, what happened after June? Did that continue on? [179]

A. Well, I think Mr. Spotswood was doing the work at Martinez at that time and down at the Vulcan Foundry.

Q. I am speaking now about work that you observed at the Vulcan Foundry.

A. I don't recall just what I saw at the Vulcan Foundry after that date, but I went there a number of times to see what was going on. It seemed to me that Mr. Spotswood was making cores in the electric oven principally at that time.

Q. After June 1938? A. Yes.

Q. Did you ever make any investigation or survey to determine the number of foundries in the United States that were using direct-fired ovens as compared with those using indirect-fired ovens?

A. No, but I understand that it is small in comparison with the open ovens. There is a lot of ovens heated by electricity, I understand.

Q. There are a lot?

A. Yes, I understand there is a lot.

Q. Have you any idea of the percentage as compared to the total number of direct-fired ovens?

A. No, I have not.

Q. It is very small, isn't it?

A. I would say it is small compared to the open-fired ovens.

Q. In arriving at your conclusion that you could sell 69,000,000 gallons of Core-Min-Oil a year did

(Testimony of Allan B. Ruddle.)

you take into consideration the fact that before your core oil could be used in such foundries as had direct-fired ovens, it would be necessary for you to remodel or rebuild the ovens in some manner to overcome the gas fumes?

A. Yes, that would have to be done in some manner.

Q. That was taken into consideration by you in arriving at the figure of 69,000,000 gallons of Core-Min-Oil that could be sold?

A. That is right. [180]

Q. Now, you mentioned something about a difficulty that you experienced before going with Shell, which was the fast air drying of the bonded sand on the bench; is that right?

A. Well, that was a difficulty until we found out that we could keep the material in a closed container, and when it was on the bench, to keep wet sacks over it.

* Q. You were of the opinion, then, that that difficulty really had been overcome by the time you went to Shell and that all you had to do was to either keep the sand in containers that were airtight, or keep it covered with wet sacks; is that right?

A. That is right. This material dries—hardens by evaporation.

Q. It dries very rapidly, doesn't it?

A. Yes, it does, if you keep it exposed to the air.

Q. Do you know what the general practice in foundries is throughout the United States with respect to the method of keeping this bonded sand,

(Testimony of Allan B. Ruddie.)

that is, sand that has been mixed with the core oil?

A. No, I don't.

Q. Was the fact that before your core sand could be used it had to be stored in special airtight containers or kept under damp, wet sacks a matter that was taken into consideration by you in arriving at the figure 69,000,000 gallons per year which you hoped and expected you would sell?

A. Yes, that was.

Q. Now, we have mentioned something about selling this Core-Min-Oil in two packages, I think you said. By that you simply mean that if a large foundry, which used a tremendous number of gallons of core oil,—say Chrysler—wanted to buy your Core-Min-Oil, he would have to buy one tank car of your asphalt emulsion and another tank car of your solution; is that right?

A. That is right. [181]

Q. Whereas, if he wanted to buy linseed oil, he could buy one tank car; is that right?

A. That is right.

Q. Now, if we start out with the assumption that a tank car will contain 10,000 gallons of linseed oil, and the Chrysler people wanted to buy an amount of Core-Min-Oil that would give them the equivalent of 10,000 gallons of linseed oil, how many tank cars would they have to have?

A. They would have to have three tank cars.

Q. Three?

A. About three times as much, we figured.

(Testimony of Allan B. Ruddie.)

Q. That would be three times as much. In other words, they would have to have facilities for storing three times as much? A. That is right.

Q. They would have to have facilities for pumping three times as much from the tank cars to the place of storage? A. That is right.

Q. They would have to have facilities for pumping three times as much from the place of storage to the place it was to be used? A. Certainly.

Q. And they would have to have different containers too, wouldn't they?

A. They would have to have two sets of containers if they had them in two packages.

Q. Did you ever give that matter any consideration when you arrived at the conclusion that you hoped and expected you could sell 69,000,000 gallons of Core-Min-Oil a year? A. Yes.

Q. Was the fact that before you could use your Core-Min-Oil in any foundry you would have the foundry fit the core oil rather than having a core oil fit the foundry given any consideration?

A. Yes, we talked of that.

Q. You took that into consideration?

A. Yes, we did.

Q. None of these factors so far, however, deterred you from [182] hoping or expecting that you would eventually assume and take over the entire market of linseed oil?

A. That is right, because of the cost.

Q. The cost of what?

(Testimony of Allan B. Ruddie.)

A. The saving in cost; the cost of material is one thing.

Q. Let us look at that just a second. You said something yesterday that Mr. McSwain stated that he was going to sell your Core-Min-Oil at fifty cents a gallon; is that right?

A. Yes, that is what he said, when he put it into one package and took it to Axelson, that he made the price to Mr. Axelson in Los Angeles of fifty cents a gallon, and Mr. Axelson did not object to the price.

Q. Would you have been satisfied to have your core oil sell at fifty cents a gallon? A. Yes.

Q. Do you think that is a fair market price for it?

A. I wouldn't know. We haven't any idea of what the fair market price should be on it. There is a great saving in drying time.

Q. Do you mean to say you never figured out what you thought would be a fair market price for your core oil, Mr. Ruddie?

A. Well, in talking with the Shell Company, it was agreed they would set the price, and it was left entirely in their hands to set the price of this core oil.

Q. My question is, Is it your testimony that you never at any time figured out a probable market price for your core oil?

A. Well, we discussed many prices for it, but we never——

(Testimony of Allan B. Ruddle.)

Q. I am not speaking of Shell.

A. No, I did with Mr. Peck discuss many prices.

Q. What were some of the prices you arrived at?

A. We talked twenty cents a gallon, twenty-five cents a gallon, [183] thirty cents a gallon, forty cents a gallon——

Q. In other words, you started at a minimum of twenty cents and went as high as fifty cents; is that right? A. That is right.

Q. Suppose we take a mean of say thirty-five cents a gallon. Would that be fair?

A. I don't know whether it would be fair or not.

Q. It wouldn't be fair to you?

A. Yes, I would say that would be fair.

Q. Do you think it would be too much for the foundry?

A. Well, I don't know whether it would be too much or not.

Q. What price do you think would be fair both to you and the foundry?

A. I haven't any way of telling.

Q. Do you want to take twenty-five cents as being a fair price? A. No, I wouldn't say.

Mr. Hackley: If your Honor please, I think this is highly argumentative and speculative. This witness has not attempted to qualify as an expert on prices on this article. The Shell Company under the contract reserved exclusively the right to determine the market price at which the product

(Testimony of Allan B. Ruddie.)

should be sold. They, and they alone, are the ones that can tell what price would be adopted. [184]

Mr. Aurich: I don't want to be insistent. My only point is this: This witness has told us that Core-Min-Oil had a great advantage over linseed oil because it was cheaper. I want to bring out some facts and figures by this witness to show that he is highly in error.

The Court: Objection overruled.

Mr. Aurich: Q. Do you recall discussing the price at which Core-Min-Oil could be sold with the American Bitumuls Company?

A. No, I do not.

Q. You have no recollection of that at all?

A. No, I have not.

Q. You don't recall submitting a prospectus or a pamphlet or a document, whatever you call it, to them in which you set out the probable price at which your Core-Min-Oil could be sold—you or Mr. Peck?

A. No, I don't remember that.

Q. You have no recollection of that?

A. No, I have no recollection of it.

Q. Who handled these negotiations that you talk about between you and the American Bitumuls Company? Did you have anything to do with them at all?

A. Very little.

Q. Who handled them?

A. Well, Mr. Peck—Lydell Peck had more to do with it than I did.

Q. Weren't you consulted in the matter at all?

(Testimony of Allan B. Ruddie.)

A. Yes, but I was busy working on tests and things most of the time.

Q. And you don't recall anything about it?

A. No.

Q. Well, if you won't take a figure, Mr. Ruddie, I am going to take a figure for you. We are going to assume that it is going to be fair to your and fair to the foundry to sell your Core-Min-Oil at thirty cents a gallon. What was the market price of linseed oil per gallon in 1938?

A. Well, I would [185] say about a dollar a gallon.

Q. About a dollar a gallon. That is straight linseed oil? A. Yes, that is as I remember it.

Q. Do you know how many foundries used straight linseed oil?

Mr. Hackley: Are you talking about boiled linseed or raw linseed?

Mr. Aurich: Whatever the witness is referring to; I don't care.

A. Well, the Vulcan Foundry used it entirely, I know that.

Q. Do you think that straight linseed oil as used by the Vulcan Foundry is the largest selling core oil in the United States?

A. Well, we understood that it was.

Q. You never heard of a diluted linseed oil being sold? A. No.

Q. You never heard of a foundry using linseed oil diluted with kerosene, for example?

A. No.

(Testimony of Allan B. Ruddie.)

Q. In which they used as say 20 to 23 per cent of kerosene? A. No.

Q. You never heard of that? A. No.

Q. But your impression is now that a man could buy a gallon of linseed oil in 1938 for a dollar a gallon?

A. Maybe a little more than that, but it seems to me we figured about a dollar a gallon.

Q. It might be less too?

A. Oh, it is possible it was a little less.

Q. If we take the arbitrary figures that you have given us of thirty cents a gallon for that core oil, a foundry man has to buy three times as much as he would of linseed oil, and therefore we have a price of ninety cents a gallon as against a dollar; is that right? A. That is right. [186]

Q. And if you raised the price of your core oil we would get to the point where your Core-Min-Oil is more expensive than linseed, wouldn't we?

A. Yes.

Q. Very soon? A. That is right.

Q. For example, if you raised the price of your Core-Min-Oil you would get to the place where it costs the foundry man \$1.20 to get the same quantity of core oil that he could get for a dollar with linseed oil? A. That is right.

Q. So that whether or not there is a great saving in the price of the materials in comparison between Core-Min-Oil and linseed oil depends on a great many varying factors; is that fair?

(Testimony of Allan B. Ruddie.)

A. Well, of course, we were figuring what the material costs. The cost is—at the time we were discussing it with Mr. McSwain, why, he said that asphalt emulsion would cost—they were selling it for about five cents a gallon. Now, the solution itself would cost about five cents a gallon to mix.

Q. Would the foundryman care how much the material cost you?

A. No, but in arriving at a sales price we could meet any price that we had to, because we had a margin to work on.

Q. I have one more question about the American Bitumuls negotiations, Mr. Ruddie, and I wish you would give it some serious consideration. Isn't it a fact that during the course of your negotiations with the American Bitumuls Company you and Mr. Peck agreed that the market price for that core oil, namely, Core-Min-Oil, could be twenty or twenty-five cents per gallon?

A. Well, now, that is possible; I don't know.

Q. By the way, had you adopted this name Core-Min-Oil when you went to the American Bitumuls Company?

A. Now, I don't know that we did or not. Maybe about the time that we went to the Shell Oil Company; I don't know. We discussed the name with [187] Shell Oil Company and they thought it was a good name for it.

Q. It is a fact, isn't it, Mr. Ruddie, that your Core-Min-Oil is an oil that does not fit the foundries as they exist today, but is an oil which would require

(Testimony of Allan B. Ruddie.)

and necessitate the foundries to remodel, or special foundries to fit your particular core oil?

A. Yes. In that connection I can remember a conversation that I had with Mr. McSwain where he said that if he could sell a foundry, one foundry in a district, that would cause the other foundries to follow suit because of the great saving that they could make if they would adopt this solution.

Q. You seem to remember more and more of your conversation with Mr. McSwain as time goes on, don't you?

A. Yes, I do, because it refreshes my memory as we talk about it. This has been four years ago that all this happened.

Q. That is a long time to remember conversation, isn't it?

A. Yes, sir; I had forgot a lot about it, and as we talk about it a lot of things come back to me that I did not remember. [188]

Mr. Aurich: I will drop it, your Honor.

Q. In your testimony you made some mention about Shell shipping some oil to Axelson's Foundry, and if I remember correctly, you fix that as about the time you had the conversation with Mr. McSwain, at which time he told you that the market for core oils in the United States was sixty million gallons a year; is that right?

A. Yes, I remember that.

Q. And that is the time of the shipment of the oil by Shell to the Axelson Foundry?

A. Well, it was along about that time.

(Testimony of Allan B. Ruddie.)

Q. And that was sometime in 1939?

A. Well, I don't know the date of it, but it was——

Q. You don't even know the year?

A. It seems to me it was in '38, wasn't it?

Q. You thought it was in '38?

A. Well, I don't know whether it was——

Q. Well, I don't know; I am asking you. Can't you tell me whether that was in 1938 or 1939?

A. No, I couldn't tell you. If you will let me see that McLaren letter, I can tell you, because——

Q. What has the McLaren letter got to do with the Axelson Foundry?

A. Well, because that came right after that.

Q. What came after what?

A. The letter came.

Q. After the Axelson Foundry?

A. Yes, that is right.

Q. Shortly after?

A. Well, it was within a short time, I think.

Q. And you don't know now what year that letter was written? A. No, I couldn't tell you.

Q. And that is the letter by which Shell canceled that contract here in suit, is that right?

A. That is right. [189]

Q. Well, the letter is dated July 1939.

Mr. Hackley: July 26, 1939, I will stipulate to that—Exhibit 10.

Mr. Aurich: Q. With that in mind, will you tell me what year it was that you had this discussion with Mr. McSwain, at which time he told you

(Testimony of Allan B. Ruddle.)

that sixty million gallons of core oil was the market in the United States? A. In 1939.

Mr. Aurich: Q. Mr. Ruddle, I want to direct your attention for the next few moments to this conversation you had with Mr. McSwain sometime in 1939 at which time he is reported to have told you that there was a sixty million gallon market for core oils in the United States.

A. That is for Core-Min-Oil.

Q. For Core-Min-Oil?

A. Yes, that is right.

Q. Can you fix the period of the year for me?

A. The period of the year? Well, it was just either after he had been down to the Axelson Foundry first before they shipped anything down, or it was anyway during that time, because I remember that he had the price of fifty cents a gallon in mind when he was figuring on his desk.

Q. With reference to the letter that McLaren wrote dated July 26, 1939, can you fix the time of this conversation?

A. Yes; it was sometime prior to that; possibly two months.

Q. That would fix it roughly, then, let us say May-June 1939?

A. Yes, that is the best of my recollection.

Q. Now, can you tell me exactly what Mr. McSwain said in this conversation? And I would like to have you give me as nearly as you can recall his exact words. [190]

A. Well, I don't know that I can give you his

(Testimony of Allan B. Ruddle.)

exact words, but it was something like this: I went over to ask Mr. McSwain when they would start selling material—we were getting terribly impatient because it was just dragging and dragging, we thought—and Mr. McSwain told me—started showing me what the market would be if their solution was in one package. And I remember him sitting down to his desk and making some figures on his desk and discussing the size of this market, saying that there was sixty million gallons of Core-Min-Oil could be sold, and if we could get fifty cents a gallon it would be a nice piece for both the Shell and for us. I remember him making that statement.

Q. That is, he was speaking there of if he could get Core-Min-Oil in one package?

A. Yes, that is right.

Q. How do you happen to recollect that conversation so clearly after all these years, Mr. Ruddle?

A. Well, I do recall that, and I was thinking about it—have been thinking about it for the last few months, and that conversation came back to me.

Q. It was quite an important conversation?

A. Yes; we had been having those right along; we talked all the time, but I remembered him telling me this at that time.

Q. And you considered that an important conversation at the time that it occurred?

A. Yes, because it stood out in my mind, because I remember it had figures in connection with it.

(Testimony of Allan B. Ruddie.)

Q. It was something that has remained in your mind ever since and isn't something that you just thought of recently?

A. No, it just came back to me; I had thought of it off and on.

Q. Do you recall a controversy that arose between you and Shell sometime in the fore part of 1939 or latter part of 1938 about [191] a Spotswood-Ruddie application? A. Yes, I recall.

Q. You recall there was some disagreement between the parties at that time? A. Yes.

Q. It was subsequently settled to your satisfaction? A. Yes.

Q. And at that time you became suspicious of the Shell Company? A. Yes.

Q. And what did you do?

A. Well, I made notes of our conversations, tried to record many of the things that happened; not all of them, but many of them.

Q. In other words, following this controversy—let's fix it as January 1939,—you began to believe that perhaps the Shell Company was not doing everything they should and that you had better keep a record of all of the important conversations that you had with Mr. McSwain for future reference; is that correct? A. Yes, I kept most of them.

Q. And you kept fairly complete records from that time on?

A. Well, no. That had to do with the Spotswood application. Yes, I kept quite complete rec-

(Testimony of Allan B. Ruddle.)

ords. There is quite a space of time in there that I didn't keep anything, and whether I put them down or not I wasn't able to find them. I know there was more conversations happened than I had in my notes.

Q. I don't understand your last statement. My point is, Commencing with the Spotswood-Ruddle incident—you recall that your first not that we have referred to in your deposition is dated about January 12, 1939; do you recall that?

A. Yes, I remember that.

Q. Do you recall testifying that commencing at or about that time you kept fairly complete records of all conversations that you thereafter had with Mr. McSwain?

A. Yes, that is right.

Q. Some of those notes we have referred to in your deposition, [192] haven't we?

A. Yes, that is right.

Q. Do you recall that just immediately prior to the filing of this suit you made out a report of conversations that you had had with Mr. McSwain over this period of time excluding those of which you already had a record?

A. Yes, that is right, just as I remembered them.

Q. In other words, just prior to suit, for your counsel's benefit you sat down and detailed in rather chronological, detailed order all of the events that led up to your going to Shell, all the incidents that happened and statements made with as much detail as you could then recall?

(Testimony of Allan B. Ruddie.)

Mr. Hackley: Are you referring to an instrument in writing, Mr. Aurich?

Mr. Aurich: Yes.

Mr. Hackley: Will you show it to the witness?

Mr. Aurich: Yes, I will show it to him when he answers my question.

A. Yes, I remember writing such a statement.

Mr. Aurich: Q. And it was for the purpose I mentioned?

A. Yes, it was what I could remember at that time.

Q. It was to give Mr. Hackley the facts upon which he could predicate this suit; is that right?

A. I don't remember the purpose of it, but I sat down one day and wrote what I thought was the important parts of this——

Q. And that typewritten report or this report of your alleged conversations with representatives of Shell was made roughly a period of a year and a half or two years after some of the events occurred? A. That is right.

Q. Without looking at your memorandums, can you tell me whether there is anything contained in any note that you made about Mr. [193] McSwain's statement to you that there was a probable market for Core-Min-Oil of sixty million gallons a year?

A. No, I wouldn't say it is in there.

Q. You don't know?

A. No, I don't know whether it is or not.

Q. Do you know whether there is anything in

(Testimony of Allan B. Ruddle.)

any of your notes in which you discuss the Axelson situation?

A. It seems to me that there is. That wouldn't be in that last summary, I don't think, of the Axelson.

Q. No, that would be in a note that you made shortly after the conversation occurred, wouldn't it?

A. Yes, that would be the Axelson Foundry incident.

Q. I call your attention to a document which has been heretofore identified in your deposition as Defendants' Exhibit C for identification. It is dated at the top June 23, 1939, and on the last page June 24, 1939, that date appearing on what appears to be the tenth page. I ask you to look at it and see if you can find any reference in that handwritten note to the shipment by the Shell Oil Company of any oil to the Axelson Foundry.

Q. Well, without reading the whole document, Mr. Ruddle, consisting of ten pages, you notice that there is a reference to the Axelson Foundry on the first page, don't you?

A. That is right.

[194]

Q. What is that document, Defendants' Exhibit C for identification?

A. It is a memorandum of a conversation I had with J. F. McSwain on June 23, 1939.

Q. It was written by you on June 24, 1939, is that right?

A. That is right.

(Testimony of Allan B. Ruddie.)

Mr. Aurich: Q. Will you just read into that record what you find, at least on the first page, what you are there reporting that Mr. McSwain told you about the Axelson Foundry?

Mr. Hackley: I submit the document speaks for itself, your Honor, and I ask that it be received in evidence.

The Court: I do not know what the document contains.

Mr. Aurich: I am not going to offer it in evidence, your Honor. It is a self-serving declaration made by this witness.

The Court: How am I going to know.

Mr. Hackley: I say the document speaks for itself. It should be offered in evidence. The witness is not going to add to it or take away from it by merely reading it over.

The Court: How am I going to be able to know what it is? [195]

Mr. Hackley: Is it your Honor's wish in this case that we read to your Honor these various documents and instruments that are put in evidence?

The Court: How am I to know what is going on?

Mr. Hackley: I thought it would be too time-consuming to do that. That is why I offered the letters yesterday without reading them.

The Court: They will have to be read. I am not going to look at this record of reporter's notes.

The Witness: Do you want me to read this?

Mr. Aurich: Q. Mr. Ruddie, use these notes

(Testimony of Allan B. Ruddie.)

you made on June 24, 1939, and tell me exactly what Mr. McSwain told you about the Axelson Foundry at that conversation, as is disclosed by your notes.

A. He said he made a shipment to Los Angeles to a foundry called "Axelson Foundry," and that the emulsion arrived there in bad shape, and they wanted to try to overcome that trouble.

Q. That is the only reference you find to Axelson Foundry on the first page?

A. That seems to be the only thing.

Mr. Hackley: I submit, your Honor, either the witness should be permitted to read the whole document, or offered in evidence, the whole document offered, and I will be glad to have it read to the Court either by the witness or subsequently. But to have piecemeal some part of a document in writing offered here violates every rule of evidence.

The Court: He wants to examine him in relation to a memorandum he made previous to this hearing, is that true? [196]

Mr. Aurich: That is true, your Honor.

Mr. Hackley: The memorandum is not in evidence, your Honor. That is my objection.

The Court: Is there any doubt about this being his handwriting?

Mr. Hackley: Not at all.

The Court: Proceed; proceed.

Mr. Aurich: Q. That is the only notation that you have in your memorandum, Defendants' Exhibit C, concerning the Axelson Foundry, or have

(Testimony of Allan B. Ruddie.)

you read your notes sufficiently to be able to determine that?

A. That is the only thing I can see by hurriedly glancing at it.

Q. I am not trying to trap you, Mr. Ruddie. I think you are correct. But I will examine the notes tonight, and if there is any other place, I will call it to your attention. A. All right.

Q. Now, is it your testimony, Mr. Ruddie, that Mr. McSwain told you that they had shipped a drum of Core-Min-Oil in an emulsified product, or one package, in a drum, to the Axelson Foundry, and that when it arrived there it was gummy, the emulsion had broken, and they were unable to use it, but that Mr. Axelson inquired as to the price of this product? A. That is right.

Q. And Mr. McSwain told you that he told Mr. Axelson that the price would be 50 cents a gallon?

A. Well, now, maybe that was prior. Mr. McSwain made several trips to Los Angeles, and had gone to the Axelson Foundry probably prior to that.

Q. It probably never occurred at all, Mr. Ruddie, so I can't guess at these things. I have only what you tell me.

A. Mr. Peck called on Mr. Axelson—Mr. McSwain called on Mr. Axelson, and when he returned home he told both Lydell Peck and [197] myself that he had quoted a price to Mr. Axelson of 50 cents a gallon, and there was no objection to the price by Mr. Axelson, and he was very much elated

(Testimony of Allan B. Ruddle.)

over the fact that he could get 50 cents a gallon for this material.

Q. If you testified yesterday that Mr. McSwain told you that after the drum of oil had been shipped Axelson, you were in error?

A. Well, I couldn't tell by that whether or not it was after or before. I do know that he made trips there in discussing this——

Q. Yesterday you testified——

Mr. Hackley: Mr. Aurich, will you show the witness the record of yesterday, if you are stating his testimony?

The Court: I recall the testimony yesterday. He said he was elated with the price of 50 cents a gallon. Proceed with the case.

Mr. Aurich: Q. Do you recall Mr. McSwain ever telling you that he had stopped and talked to Mr. Axelson of the Axelson Foundry in Los Angeles, and that Mr. Axelson told him that after trying the Core-Min material in his foundry, he found he could not use it because of the different sizes of cores that require different lengths of drying time?

A. I have no doubt, if it is in evidence, that Mr. McSwain told me that, because I wrote that down right after.

Q. What do you mean, "if it is in evidence," Mr. Ruddle?

A. I thought you were reading from that memorandum.

Q. And supposing I was not reading from the

(Testimony of Allan B. Ruddle.)

memorandum? Do you have any recollection of that conversation?

A. No, I have not.

Q. You do not know whether that occurred or not?

A. No, I do not.

Q. What is this document dated July 19, 1939, Defendants' Exhibit E for identification, that I am handing you?

A. That is a copy [198] of a memorandum of a conversation that I had with Mr. McSwain.

Q. And when was the memorandum made with respect to the time of the conversation?

A. Well, it is dated July 19th, and I imagine it would be made on that day or the day following. I know it was made right afterward.

Q. I will call your attention to what appears to be the 7th page of that memorandum, and I will ask you to read it carefully, and using that memorandum to refresh your recollection, will you tell the Court what Mr. McSwain told you on July 19, 1939, concerning the shipment of the oil to Axelson Foundry?

A. Do you want me to read it?

Q. No. Doesn't that refresh your recollection as to the conversation?

A. Yes, I remember that now.

Q. Tell the Court what the conversation was you had with Mr. McSwain on July 19, 1939, concerning the shipment of oil to the Axelson Foundry.

A. Mr. McSwain said that he stopped and talked to Mr. Axelson of the Axelson Foundry in Los Angeles. Mr. Axelson told him after trying the Core-

(Testimony of Allan B. Ruddle.)

Min material in his foundry, he found he could not use it because of the different size cores that required different lengths of drying time.

Mr. Hackley: May I ask the record to show that the witness read from Defendants' Exhibit E, if it please the Court?

Mr. Aurich: I don't know whether he read from that or not.

Mr. Hackley: Q. Is that correct, Mr. Ruddle?

A. Yes, I read from that.

Mr. Aurich: Q. Did you read Defendants' Exhibit E for identification in its entirety?

A. No, I did not. I just read that part of it.

Q. And you did not read Defendants' Exhibit C for identification in its entirety?

A. No, I did not. [199]

Q. Are you able to testify now whether or not there is anything contained in either one of those two documents wherein you report a statement by Mr. McSwain that there is a market for 60,000,000 gallons of Core-Min-Oil?

A. No, there is nothing in there at all.

Q. There is nothing in either one of the exhibits? A. No, there is not.

Q. Is there anything contained in any memorandum you made of any conversation with Mr. McSwain where that fact is reported?

A. No, I didn't find any.

Q. When you made the statement up for Mr. Hackley just prior to the filing of the complaint herein, and after the controversy between you and

(Testimony of Allan B. Ruddle.)

Shell had arisen, which statement is Plaintiffs' Exhibit 1 attached to the deposition of Mr. Ruddle, did you make any reference to the fact there that Mr. McSwain had told you that there was a probable market of 60,000,000 gallons of Core-Min-Oil per year?

Mr. Hackley: I object to the testimony about a written document, unless it is offered, your Honor. It speaks for itself.

The Court: What is this you are reading?

A. I am reading a memorandum I made a year and a half after—just a memorandum, as I recall, of the events of this. I don't see any mention in this.

Mr. Aurich: Q. Now, you have made some mention in your testimony about a core wash.

A. Yes.

Q. Just how did you make up this core wash, Mr. Ruddle?

A. I used the solution that is made up of sodium silicate and sodium sulphate—I mean aluminum sulphate and—I don't know whether I gave it to you right or not. Sodium silicate is one of the ingredients, with water, and to that I added some graphlite. And I used some core wash at the Macauley Foundry with that. And [200] then when we were doing work—when Spiri was doing work at the Vulcan Foundry, I talked with Mr. McSwain about that. He said that he had better make up a sample and take it over to Mr. Spiri and let him try it.

(Testimony of Allan B. Ruddle.)

Q. I do not like to interrupt your answers, Mr. Ruddle, but I think you are going very far afield, and I think we will make much better time if you try to confine your answers to my questions. My only question was, How did you make up your core wash that you referred to? Did you fully answer that question? Or did you use something else besides the solution and graphite?

A. I was going to lead up to it. I tried carbon black, it was called, manufactured by the Shell Chemical Company, in the sample that I gave to Mr. Spiri.

Q. Carbon black and what else?

A. The solution.

Q. What were the percentages of solution to graphite?

A. I have that written down some place, but I don't know that I can tell you. I think there are 2500 cc's of solution to 1200 cc's of graphite. Now, that is just a guess. I can get you the right amount.

Q. Roughly two to one?

A. Ten to one, isn't it?

Q. Ten to one? A. Twenty to one, I think.

The Witness: Well, I think it really is 20 to 1.

Mr. Aurich: Q. What did you mean when you said you could get me the exact formula?

A. I have it written down some place; maybe I can find it.

Q. Will you look for that this evening?

A. Yes, I will try to find it.

(Testimony of Allan B. Ruddie.)

Q. When you used this carbon black you spoke of in your solution, [201] what were the percentages of each?

A. That is the percentage I gave to you, on carbon black.

Q. 2500 cc's of solution and 1250 cc's of carbon black?

A. I had better get that for you, because I am only guessing.

Q. You have no independent recollection at the present time?

A. No; I had the amount and gave it to Mr. Spiri, put it on the can, how to mix it.

Q. Do you recall what it is now? A. No.

Q. You will get that for me?

A. I think I can.

Q. Both the first core wash of the solution and grahpite; secondly, the core wash which contains your solution and carbon black, and while you are looking for that you might as well look for the formula of the solution that you used in making this core wash.

Your counsel has asked me to inquire whether or not those formulas may be in these notebooks which were identified at the taking of your deposition.

A. It is possible that it is in there, but I wouldn't be sure.

Mr. Aurich: If the Court has no objection, I have no objection to letting the witness withdraw these for this evening, for the purpose of making

(Testimony of Allan B. Ruddle.)

a search. They have only been marked for identification in the deposition.

Q. And if I have not included all of them in the group which I had, Mr. Ruddle, I wish you would take whatever you can find to enable you to give me the answer I want. A. That is right. [202]

Q. I do not suppose you can tell me now anything that you disclosed to Shell about the formula for making your core wash either with graphite or with carbon black?

A. As I recall, I made a card, I wrote it on a card and attached it to the can that I turned over to Mr. Spiri.

Q. Did you use the graphite before you used the carbon black? A. Yes, I did.

Q. Why did you change from graphite to carbon black?

A. Well, carbon black, I was told, was in large piles at the Shell Chemical Company, and that they had a limited market for it. I believe they were selling it to Columbia Steel for \$12 a ton. And graphite is expensive, and I thought this probably would serve the same purpose. I tried it. I got the carbon black through Mr. McSwain from the Shell Chemical Company at Martinez.

Q. Do you know whether the method of making your core wash is set forth in any of your patents here in evidence? A. No, I do not know.

Q. Did you ever use any diatomaceous earth in your core wash?

(Testimony of Allan B. Ruddie.)

A. I have tried it. I have tried diatomaceous earth and all kinds of asbestos, fibre asbestos.

Q. Did you ever tell Mr. McSwain if he would use some diatomaceous earth with that solution he would have a good core wash?

A. Not that I recall.

Q. Would you get a good core wash using diatomaceous earth in your solution?

A. I doubt very much that we would.

Q. Didn't you describe that by mixing diatomaceous earth with your solution you would get a good core wash in one of your patents here in evidence?

A. In one of the patents?

Q. Yes.

A. It is possible that I did; I don't recall.

Q. Let me call your attention, Mr. Ruddie, to Plaintiffs' [203] Exhibit 2, which is your patent No. 2,204,913, to the statement appearing on page 2, column 1, beginning at line 62, which reads as follows:

"Burning of the core due to impinging of molten metal during the pouring operation, which is ordinarily prevented by a coating of specially prepared substances for this purpose, which are formed principally of graphite, asbestos, et cetera, may be prevented by the application to the surface of the completed core of a core paint made up of a mixture of my solution with diatomaceous earth."

(Testimony of Allan B. Ruddie.)

The patent then goes on to say how it may be mixed.

A. Yes, I would say that would make a good core wash.

Q. You think now——

A. Yes, I recall I tried it and it was a good core wash.

Q. But you do not recall that you ever told Mr. McSwain anything about it, or do you recall that you told him at that time?

A. It is possible I told him about that. I do recall I told him about using the graphite and the carbon black.

Q. You think graphite and carbon black make better core washes than the diatomaceous earth described in your patent?

A. Yes, I think it would.

Q. Prior to your negotiations with the Shell Oil Company regarding your Core-Min-Oil, had any Core-Min-Oil been sold either by you or by Mr. Peck or anyone acting under his authorization?

A. None.

Q. Did you have any business at all of making and selling Core-Min-Oil prior to your negotiations with Shell? A. No, we hadn't.

Q. When you first mentioned your core oil to Mr. McSwain, I believe you told him that its ingredients were asphalt emulsion [204] and a secret solution? A. Yes, that is right.

Q. You testified yesterday that you had done some work on fire-proofing of lumber with a solu-

(Testimony of Allan B. Ruddie.)

tion that you were interested in, and that somehow or other you got the idea that you could make a core oil for foundries out of this solution. What were the chemicals that were contained in this solution that you used for fireproofing properties?

A. Well, it was the same chemicals but they are used a little differently.

Q. Will you name them for us?

A. Sodium silicate, aluminum sulphate, and sodium fluo-silicate.

Q. That solution had been invented by a man by the name of Watson, is that right?

A. That is right.

Q. Did you get the idea that you could make a core oil for foundries out of this solution with which you had done some work in connection with the fireproofing of lumber?

A. Well, it was the same chemicals, but not the same solution used for fireproofing lumber. That is a low Baume solution and it is made up differently.

Q. So if you testified yesterday that you did get the idea, as I have described, using this same solution, that was in error?

A. Yes, I did not mean to say I was using the same solution—the same chemicals is what I meant.

Q. This solution of Mr. Watson composed of sodium silicate, [205] sodium fluo-silicate and aluminum sulphate is a solution that had been patented long prior to the time you went to the Shell Oil Company?

A. Yes, I think so.

(Testimony of Allan B. Ruddie.)

Q. And you had been instrumental in attempting to prote that solution, is that right?

A. That is right.

Q. That was as far back as 1929?

A. That is right.

Q. Now, on your direct examination you testified about some experiments you made early in your work in an endeavor to put, first, the red and the pale oils you spoke of in a single package with your solution, and you also spoke of some work that you did in connection with your attempts to place an asphalt emulsion and your solution in a single package or container. Do you recall that testimony?

A. Yes; that was not asphalt emulsion; it was just asphalt.

Q. Just asphalt?

A. Yes. I tried to emulsify it.

Q. Why were you attempting at that stage of the proceeding to put these various ingredients into a single package or container?

A. Well, I was trying to make a core oil, and I was trying to put it in one package.

Q. I do not want to mislead you here, Mr. Ruddie. It may be through inadvertence. But I am going to call your attention to page 23 of your testimony you gave here yesterday, and I think if you read it, you will find that you spoke of attempts to put the sodium silicate solution and the asphalt emulsion in a single package. Will you read that and see if that is correct (handing transcript to the witness)?

(Testimony of Allan B. Ruddle.)

A. What period of time is this?

Q. I do not know what period of time it is. I am only referring to the fact that on your direct examination you testified in substance that you attempted to put sodium silicate and asphalt [206] emulsion in a single package. I am not interested at the present time in the time.

A. You said a minute ago, as I understood I was testifying, that was when I first started the experiments.

Q. Oh, no, I do not mean, of course, before you started with asphalt emulsion, but you did attempt to put asphalt emulsion and sodium silicate—asphalt emulsion and your solution in a single package, and you also attempted to put the pale oil and red mineral oils into one package with your solution; is that correct?

A. Yes, I put them together and they separated out.

Q. Yes. Why were you trying to put them in one package?

A. Well, that was the beginning of the tests. Why I did it I couldn't tell you.

Q. Of course, you didn't do it because you appreciated the fact that to sell them in two packages would be a rather difficult sales hazard to overcome?

A. That never occurred to me at the time.

Q. That thought never occurred to you at the time?

A. No, it did not.

Q. You have no reason to offer now why you

(Testimony of Allan B. Ruddie.)

tried to put them in a single package other than what you have stated? A. That is right.

Q. During all your experiments from January 1937, or whenever it was—you commenced about that time—up to the time you ceased experimenting and took your core oil to Shell, if I understand your testimony correctly, you were experimenting with a solution and attempting to combine with a number of various ingredients at various times; is that right? A. That is right.

Q. Did you ever take asphalt emulsion as your starting point or [207] base as a core oil and attempt to mix it with ingredients other than your solution? A. Yes, I think I did.

Q. When, where, and what other ingredients did you attempt to use?

A. Well, I then—I couldn't find any record of it, but I remember trying several things with it.

Q. Well, when was it?

A. Well, at the Macauley Foundry we tried making cores out of asphalt emulsion alone, and then we added the various things to it. I couldn't give you any detail on it, because, in the first place, the baking time was even longer than Houghton Oil.

Q. I am not interested in baking times or anything else; I am interested in knowing what ingredients other than your solution you attempted to mix with asphalt emulsion to make a core oil, and I do not mean experiments for the purpose of observation; I mean for the purpose of perfecting a core oil.

(Testimony of Allan B. Ruddie.)

A. Well, I think I used sodium sulphate straight in one or two cases.

Q. Sodium silicate forms major parts of your solution? A. That is right.

Q. What else?

A. Well, I can't recall now. It seemed to me—I think there was a first application for patent on something entirely different, and that is where I tried that—that other patent that was abandoned.

Mr. Aurich: Q. In other words, at the present time you have no independent recollection whether or not you used anything else other than asphalt emulsion or sodium silicate with asphalt emulsion; is that correct?

Mr. Hackley: At what time, Mr. Aurich? [208]

Mr. Aurich: At the time the witness is speaking of.

A. I couldn't—it seemed to me I used some phosphates—I think in that patent that was abandoned, and in there I ran quite a series of tests with asphalt emulsion and the phosphates.

Mr. Aurich: Q. Those experiments did not continue very long, did they?

A. No, they did not.

Q. A very short period of time, as a matter of fact? A. I think so.

Q. In one of your preceding answers you said something about the first application was abandoned, and I wanted to go into that a little bit. I don't understand your use of the word "first," Mr. Ruddie.

(Testimony of Allan B. Ruddle.)

A. Well, I meant the application, the one that was abandoned.

Q. You mean the one that was abandoned irrespective of its number—first, second or third?

A. That is right.

Q. Going back to that abandoned application, is that one of the applications that is mentioned in your contract with Shell?

A. That is right.

Q. Without anything more than that now, can you tell me whether or not that application had been filed at the time you had your first conversation with McSwain, or was the application filed after you had that conversation with Mr. McSwain?

A. I wouldn't know. [209]

Mr. Aurich: May it please the Court, it seems that there is a little confusion between counsel as to whether or not a certain exhibit is a true and correct carbon copy of a letter which was sent by the Shell Oil Company to Mr. Hackley. Yesterday afternoon Mr. Hackley admitted that he had received the original of the letter which is Defendants' Exhibit Y. Upon my return to the office last evening I found another letter, dated December 1, 1939, which is a day after the date of the letter Exhibit Y, and I have no way of knowing which is the copy of the letter that was sent to Mr. Hackley, and he hasn't at the present time. So we have agreed, with the Court's permission, to offer in evidence as Defendants' Exhibit Y-1 a copy of a letter from the Shell Oil Company to Mr. Hackley

(Testimony of Allan B. Ruddle.)

dated December 1, 1939, and Mr. Hackley is to see which is the copy of the letter he received and then we will withdraw the other one, if that meets the Court's approval.

The Court: Let it be admitted and marked.

(The letter referred to was marked Defendants' Exhibit Y-1 in evidence.)

Mr. Aurich: Q. Mr. Ruddle, you were going to get for me the formula of the core washes that you referred to in your testimony yesterday if you could find them in your notebooks. Did you look for them?

A. I looked through the notebooks, but I was unable to find them; but I did find the formula—I mean where I had tried out asphalt—I mean a [210] sodium solution and diatomaceous earth. My recollection now is that it made a good core wash. And I also tried out graphite at the same time. The notes are in that little book there.

Q. In other words, you want to change your testimony in that respect that you gave yesterday where you said that you did not think it would make a good core wash?

A. Well, I think I said at last that it did, but I was trying to verify that. And I also notice too in that book where the formula that you asked about—1750 cc's of sand and 125 cc's of solution and 80 cc's of—60 or 40 cc's of emulsion and 65 cc's of water, if I remember rightly, and that solution no doubt I gave to Mr. Spotswood, because

(Testimony of Allan B. Ruddle.)

that was one of the leading solutions that we were using at the time—the leading formula.

Q. You now recall that that was one of the leading formulas that you used for making your core oil?

A. Yes, in those notes—it is given in those notes that I went over last night, and I remembered it.

Q. During the time before the signing of the contract and after your first visit to Mr. McSwain did you ever deliver to the Shell Oil Company for the purpose of their experimentation any of the solution used by you in making your core oil?

A. What is the time? Can I have that question read?

Q. The time is before the signing of the contract and after your first visit to Mr. McSwain.

A. Did I ever deliver to the Shell Oil Company the solution that I used in making up Core-Min-Oil?

A. I delivered some solution to them for another purpose. It [211] was not the same as that I used—as I recall, that I used on core oils. I don't think it was the same. It was for another purpose.

Q. You spoke yesterday or on your direct examination about some tests that Mr. Spotswood performed at Martinez to determine what was causing the difficulty you were experiencing with the softening of the cores on occasions.

A. Yes, I gave him some of the solution and——

Q. My question is, You recall that testimony?

(Testimony of Allan B. Ruddie.)

A. Yes, that is right.

Q. Where did Mr. Spotswood get the solution with which he made the cores to make those tests?

A. I took the solution up to Martinez with Mr. Waller and Mr. McSwain, as I recall it.

Q. Then after your first visit to Mr. McSwain and prior to the signing of the contract you did deliver to the Shell Oil for the purpose of their experimentation the solution that you used in making up your Core-Min-Oil?

A. That is right.

Q. That solution contained what?

A. That solution contained water, aluminum sulphate and sodium fluo-silicate and aluminum silicate—I mean sodium silicate.

Q. Did I understand your testimony on direct examination to be that you gave some solution to Shell to experiment with prior to the making of the contract which included red oil in it?

A. I don't recall just what was in that test. I gave some solution to Mr. McSwain, and I think it had to do with dry mineral oil, and he sent it up to Martinez, I learned afterwards, and Mr. Ames at Martinez told me that he had tried to analyze it.

Q. What was your purpose of putting the red oil or the dry mineral oil in the solution you gave to Mr. McSwain?

A. Well, I couldn't tell you now what the test was about. [212]

(Testimony of Allan B. Ruddle.)

Mr. Aurich: I didn't ask you what the test was about. Will you read the question, please.

(Question read.)

A. Well, I was attempting to dry the oil so we could use it in paints, I think, at the time.

Mr. Aurich: Q. Did you explain to anybody connected with the Shell Oil Company when you submitted to them this solution containing this dry mineral oil that that was not your secret solution with which you had worked at Macauley's?

A. I don't think I told them anything about what it was. I gave this—I talked—I went to see Dr. Rosenstein, I think, in the Shell Oil Company, and Dr. Rosenstein told me the policy of the company was that we must turn over our patent applications and all secrets to them before the Shell will examine them, and I afterwards heard from Dr. Rosenstein that the Shell refused to examine this because I refused to give them all of the information about the—the secrets about it.

Q. Are you confusing that incident with Dr. Rosenstein with something that happened some years prior to the time we are talking about?

A. Just from my memory; it is a long time ago.

Q. Well, I know, Mr. Ruddle, it is your memory and not mine. Let me see if I can refresh your recollection. On the occasion that you took your core oil to the Shell Company, was that the first time that you had ever taken any product to the Shell Company in an attempt to interest them in it?

(Testimony of Allan B. Ruddie.)

A. The time I took the core oil to them?

Q. No, any product.

A. Well, I told you—just related that time; that is the only one I remember.

Q. And that is long prior to the time you took your core oil? [213]

A. Well, it was prior; how long prior I wouldn't be able to tell you. I probably could get you the letters on that that would give the date.

Q. I am trying to find out what you told Mr. McSwain when you delivered your solution to him which contained dry mineral oil in it. Did you tell him "This is my secret solution"? or did you tell him "This is my secret solution with some other ingredients added"?

A. I wouldn't recall what I told him at that time.

Q. There is no doubt in your mind, however, that prior to the signing of the contract you did deliver to the Shell Company your so-called secret solution to which you had added a light mineral oil?

A. Yes, that is true.

Q. Did you add that light mineral oil to your so-called secret solution in an endeavor to prevent Shell from learning what the ingredients were in your secret solution?

A. No, but I couldn't tell you what was in the solution now that I took to them. It probably had many things in it besides oil and solution.

Q. Do you remember whether that contained sodium silicate?

(Testimony of Allan B. Ruddle.)

A. I would think that it does; I don't recall just what I took to them at this time, but I do know I took something to them.

Q. Do you recall the time?

A. No, I wouldn't attempt to fix the date.

Q. I am trying to find out, Mr. Ruddle, whether that delivery of this solution with the dry mineral oil to Mr. McSwain as you testified on direct examination was in connection with your Core-Min-Oil or whether it was in connection with something entirely foreign to Core-Min-Oil? Can you answer that for me?

A. Yes; it was in connection with something entirely foreign [214] to Core-Min-Oil.

Q. I want to call your attention to page 54 of your testimony wherein you testified about giving the solution with dry mineral oil in it to the representatives of the Shell Company. Now, I would like to have you tell me whether or not you were there referring to a period of time during which you were negotiating with Shell with respect to your Core-Min-Oil, or whether it was prior thereto. And the particular portion of page 54 that I desire to direct your attention to commences on line 5 and ends at line 21. Have you read your testimony, Mr. Ruddle?

A. Yes. That referred to the early—that was prior to the—that I referred to, that was prior to negotiations for the contract.

Q. And it was prior to the first time that you discussed Core-Min-Oil with Mr. McSwain?

(Testimony of Allan B. Ruddle.)

A. Yes, that is right.

Q. Now, you recall the occasion, do you, that you first disclosed the method of preparing cores with Core-Min-Oil to Mr. Spotswood prior to the making of the contract? I am not asking you for the date; I am asking you, Do you recall the occasion?

A. Yes, I think vaguely.

Q. Can you tell me what Mr. Spotswood said to you at that time?

A. No, I can't.

Q. You can't recall anything that he said?

A. Only generally.

Q. Give us the best of your recollection, please.

A. We talked about making cores. He knew nothing about it; wanted to—As I recall, this was at Martinez, and I showed him—I took up some kind of a little mold, gelatin mold from home up there and we mixed ingredients and made some cores up there at Martinez, as I recall it.

Q. Is that all that you can recall that was said by Mr. [215] Spotswood on that occasion?

A. Well, generally, yes.

Q. Well, particularly, then.

A. Well, that is all I recall at this minute.

Q. Do you recall the occasion when you first disclosed the method of preparing cores with your Core-Min-Oil to Mr. Waller—irrespective of the date, now?

A. I think Mr. Waller was along.

Q. Was that the first time that you had disclosed your formula to Mr. Waller?

A. I don't recall whether I told Mr. Waller in

(Testimony of Allan B. Ruddle.)

Mr. McSwain's office about the formula prior to going to Martinez or not.

Q. Mr. Ruddle, I am not interested in dates at all at this particular time; I am only interested in an occasion, whenever it happened or wherever it happened; and you do recall that at some time you did disclose to Mr. Waller the proportions of Core-Min-Oil that you used in making your cores?

A. Yes, that is right; I do recall that.

Q. That is right.

A. The circumstances about it are vague in my mind.

Q. Now, can you——

A. I can remember that Mr. Waller and Mr. McSwain and Mr. Spotswood were there, and Mr. Ames at the Martinez refinery when I disclosed the secrets of that part of the——

Q. Now, can you tell me anything that Mr. Waller said at the time that you first disclosed to him the method of preparing cores with Core-Min-Oil?

A. No, I can't.

Q. Can you at this time tell me anything that Mr. McSwain said to you on the occasion when you first disclosed to him the formula that you used in making cores with your Core-Min-Oil?

A. No, I can't. [216]

Q. On page 94 of the transcript you have testified that you gave Shell all of the discoveries you had made in connection with the use of asphalt and solution for use in foundries. Will you name all of

(Testimony of Allan B. Ruddle.)

the discoveries that you had made in connection with the use of asphalt and solution for use in foundries and which you disclosed to the Shell Company? I call your attention to the portion of the transcript to which I have referred.

Mr. Hackley: You will note that in the next line the witness limited the question, "for the purpose of making cores," Mr. Aurich. You are including that in your statement, are you?

Mr. Aurich: If the witness has any qualifications to add, he can add them.

Mr. Hackley: You are quoting from the record. I want you to quote accurately.

A. No, I gave them everything that I knew about, how it was used, every proportion that I had tried, everything about it that I knew.

Mr. Aurich: Q. You said that quite a few times, Mr. Ruddle, and I understand very well that that is your position; but I want you to tell me specifically and definitely all of the discoveries that you had made in connection with the use of asphalt and solution for the purpose of making cores or for use in a foundry that you told to the Shell Company and to which you referred on page 94 of the transcript.

A. I haven't any notes left but just a few there. It would be hard for me to enumerate now from memory the things that I told the Shell Oil Company about this.

Q. I am not asking you about things you told them about; I am asking you about what discoveries

(Testimony of Allan B. Ruddle.)

you told Shell. For example, you told them you had discovered a new core oil; is that right? [217]

A. That is right.

Q. What else did you tell them you had discovered?

A. I told them that I had discovered that by the use of asphalt in the core that the core became friable and poured out of the castings.

Q. What else did you tell them that you had discovered?

A. I told them that I had discovered that the time for baking cores was—by using this was a great deal less, about one-third as much as other baking time of other products that were used in foundries.

Q. Perhaps we are talking at cross purposes. I am not asking you to tell the Court what the attributes of your core oil were; I am asking you to name the discoveries you made. You told them you discovered a new core oil. That is one discovery that you made. Did you tell them any other discovery that you had made outside of core oil?

A. You mean drying mineral oil and the like?

Q. As to subject matter; I don't know whether it is dry mineral oil or not, Mr. Ruddle.

A. Well, I worked on many things. Now, I don't know——

Q. What did you have in mind at page 94 of your testimony where you said that you disclosed to Shell all the discoveries that you had made in connection with the use of asphalt and solution for

(Testimony of Allan B. Ruddie.)

the purpose of making cores for use in a foundry?

A. That is the discovery of using this solution together with asphalt.

Q. For the purpose of making cores?

A. Making cores.

Q. That is all you had reference to on page 94 of your testimony?

A. Together with the core wash that was used.

Q. Oh, so you told them also about the core wash; is that right? [218]

A. I don't remember the date that we told them about the core wash. I think that came up at the time the contract was being negotiated, but as to dates I——

Q. I am as much in the dark about this as you are; I am merely trying to straighten out what seems to me, at least, an ambiguous record. You look at the question which your counsel asked you and to which you gave the answer to which I have directed your attention, and tell me what you meant by that answer. Name all the discoveries that you were there referring to (handing transcript to witness).

The Witness: What page was that on?

Mr. Hackley: Starting at the bottom of page 93, line 28, Mr. Ruddie, you will find the question there. The answer appears on the top of the next page.

A. I meant by that everything I knew in connection with that discovery, is what I meant.

Mr. Aurich: Q. By that testimony at page 94 of the record you meant that you had disclosed to

(Testimony of Allan B. Ruddle.)

Shell everything that you had learned in connection with your core oil? A. That is right.

Q. On your direct examination at pages 104 and 105 you have testified that you did not know of any change in the formula that had been made by Shell at all in Core-Min-Oil from late 1937 or early 1938 until the time of the shipment of the core oil to the Axelson Foundry, which we fixed yesterday as being sometime in May or June 1938. What do you mean by "change in formula" at that place in your testimony. And I will show it to you and ask you to read from page 104, line 22 to page 105, line 2. I might help you there by asking you this specific question: Did you mean by "change in formula" a change in the [219] proportions of solution and emulsion to sand, or did you mean a change in making Core-Min-Oil in the ratio of emulsion and solution, or did you mean a change in the formula of your solution?

A. A change in the formula of the solution is what I had in mind.

Q. Is it your testimony, Mr. Ruddle, that prior to 1939 in the month of June you did not know of any change in the formula of your solution that had been made by Shell?

A. Can I have the question again? I don't understand what he wants.

(Question read.)

A. Not that I recall now.

Mr. Aurich: Q. You mean you did not know of any?

(Testimony of Allan B. Ruddle.)

A. Well, I won't say I didn't know, but I don't recall any now.

Q. You said you didn't know of any on pages 104 and 105 of the record.

A. Well, that is my memory, that I didn't know.

Q. Do you recall testifying right in this very case on direct examination that you knew that Mr. Spotswood had been experimenting with changes in your formula, changes in the ratio of asphalt emulsion to solution, changes in the ratio of solution to asphalt emulsion; that he was running up the scale on one side and down the scale on the other?

A. Yes, but——

Mr. Aurich: Q. Can you answer the question, please, Mr. [220] Ruddle?

A. Well, I knew that tests were being run and variations were being tried.

Q. Now, long prior to June 1939 you knew as a matter of fact that the Shell Oil Company had discontinued, generally speaking, their work and attempts to develop a core oil using your secret solution and asphalt emulsion, and had done considerable work and were doing considerable work with straight sodium silicate and asphalt emulsion?

A. I knew they were trying, yes.

Q. You knew that long prior to 1939, didn't you?

A. Yes, I was told that.

Q. And that is a change in your formula, isn't it, Mr. Ruddle?

A. No, that is not; that is another formula.

Q. That is another change of your same formula?

(Testimony of Allan B. Ruddle.)

A. No, but that is another formula; that is not the formula that I gave them.

Q. Did the Kingwell Foundry ever use your Core-Min-Oil in their commercial operations?

A. No, they did not.

Q. Did the Macauley Foundry ever use your Core-Min-Oil in commercial operations?

A. No, sir.

Q. Did the Vulcan Foundry ever use your Core-Min-Oil in commercial operations?

A. They did not.

Q. Did any foundry that you know of ever use your Core-Min-Oil in commercial operations?

A. No, they did not. [221]

Q. Now, I want to direct your attention, if you will, please, to the disclosures of the formula of your solution that you made to the Shell Company. Will you concentrate your mind on that for a few minutes, please?

A. All right.

Q. If I understand the facts correctly, you did not disclose the formula of your secret solution until after the contract in controversy was signed?

A. That is right.

Q. And then you disclosed it to Mr. McSwain?

A. Well, he was one.

Q. Will you give me the formula of the solution that you disclosed to Mr. McSwain?

A. One gallon of water, one ounce of aluminum sulphate, one ounce of sodium fluosilicate, and two gallons of sodium silicate. If I recall, that was the formula I gave him.

(Testimony of Allan B. Ruddie.)

Q. Did you ever disclose a formula for making your so-called secret solution to Mr. McSwain which consisted of one gallon of water, one ounce of aluminum sulphate, one ounce sodium fluosilicate, and one gallon of sodium silicate?

A. Well, it is possible; that is just one of the variations of the formula.

Q. Had you ever done any work with that formula? A. Yes, I had.

Q. What is the resulting Baume degree of a solution made in the proportions that I have given you?

Mr. Hackley: Will you repeat those proportions, please, Mr. Aurich?

Mr. Aurich: I will be glad to. One gallon of water, one ounce of aluminum sulphate, one ounce sodium fluosilicate and one gallon of sodium silicate.

A. Well, I wouldn't be able to tell you offhand, but I think it is 24 Baume, if I recall.

Q. You had done considerable work with that formula?

A. Yes, we were trying to fix a tree spray. [222]

Q. I didn't understand you.

A. A spray to kill mites on trees.

Q. But you never used that formula for making cores?

A. Oh, we tried it and, as I recall, that is what that formula was that I gave to Mr. McSwain at that time.

Q. Why did you give him a formula for spraying trees when he was interested in core oil?

(Testimony of Allan B. Ruddle.)

A. Well, I did, and he sent me to Mr. Gorthy, I think his name was, on the same floor in that building.

Q. Did you ever use the formula I have referred to in making cores?

A. Yes, I have. I have tried all Baumes of that solution.

Q. I would like to get the name of that man whom you have mentioned.

A. I think it was Gorthy, but I wouldn't be sure.

Q. How do you spell that?

A. G-o-r-t-h-y.

Q. What was the result of cores made with Core-Min-Oil when you used the formula I referred to?

A. Well, I think they were lacking in binding strength, as I recall.

The Court: This is the third day of this trial. I suggest to you that you get through with this witness.

Mr. Aurich: Yes, your Honor. I will be through very shortly.

Q. In other words, cores made with the formula I referred to are unsatisfactory?

A. Now, we made cores out of that some were satisfactory, some were not.

Q. Now, you also disclosed your formulas to Mr. Zublin? A. We did.

Q. Do you recall disclosing a formula to him of one gallon of water, one ounce of aluminum sul-

(Testimony of Allan B. Ruddie.)

phate, one ounce sodium fluosilicate, and one gallon of sodium silicate?

A. It is possible that I did.

Q. Did you also disclose to Mr. Zublin another formula consisting of one gallon of water, four ounces of aluminum sulphate, four [223] ounces of sodium fluosilicate, and three gallons of sodium silicate?

A. Yes; I think at the time I gave that to him I was trying to dry mineral oil, and I took Mr. Zublin up to my apartment, and on the stove I dried mineral oil, and Mr. Zublin witnessed it, and gave me an affidavit that it dried. I think that was the occasion for giving that formula.

Redirect Examination

Mr. Hackley: Q. Prior to your work in connection with Core-Min-Oil did you ever have any experience at all in foundry practices of core making?

A. None whatever.

Q. Do you consider yourself today to be an expert in core making and foundry practices?

A. Certainly not.

Q. You described certain conferences you had with a Doctor Cleveland of the Philadelphia Quartz Company, at which time he gave you a sample of asphalt emulsion. Was this the only conference or discussion you ever had with Doctor Cleveland during the time of the development of core oil?

A. No, I had been to Doctor Cleveland's place a great many times. He gave me many things to try while I was—he gave me things to try there—I was

(Testimony of Allan B. Ruddle.)

trying to get it in one package at one time, the red oil, the pale oil, and the solution, and he gave me a number of things to try, to get the product in one package. [224]

Q. Are you talking about Core-Min-Oil or some other product?

A. I am talking about—you asked me about my visits to Doctor Cleveland.

Q. Yes. Well, I wondered. You mentioned getting it in one package; is that Core-Min-Oil or is that something else?

A. Well, it was the solution of red oil at the time.

Q. Not Core-Min-Oil?

A. No, not Core-Min-Oil.

Q. Have you any notes relating to your conferences with Doctor Cleveland?

A. Well, I have—I found one last night. I found a note where Doctor Cleveland gave me several things to try, to try to emulsify it.

Q. You found that while you were looking, at Mr. Aurich's request, for notes on core wash?

A. Yes; formula for core covering, core wash.

Q. I show you a notebook which has been identified in your deposition, taken by the defendants here, as Defendants' Exhibit N for identification, and ask you to call attention to any note or notes which you note there relating to your conferences with Doctor Cleveland.

A. I see a note here dated June 1, 1937: "Chemicals used to emulsify solution with mineral oil to

(Testimony of Allan B. Ruddie.)

make a complete emulsion." And then it enumerates some seven or eight: "Sodium oleate, calcium magnesia, resin soap, gum arabic, gelatine, eggs, also interamine sold by L. H. Butcher."

Q. Did you note the date of that entry for the record? A. Yes; June 1, 1937.

Q. Is that the date when the entry was made?

A. Yes, that would be on that date.

Q. This is in your handwriting?

A. That is right.

Q. It is page 297 of your notebook, Defendants' Exhibit N for identification, is that correct?

A. That is right. [225]

Q. You testified in the course of your examination here that at the time you took Core-Min-Oil to the Shell Oil Company late in 1937 or early in 1938 you were troubled by inconsistent results in the cores, and that Mr. Spotswood of the Shell Company determined that that inconsistency grew out of the gases generated in combustion in direct fire ovens, if I understood you, is that correct?

A. That is right.

Q. And I believe you testified that he worked that out sometime in January or February, 1938, is that correct?

A. As I recall, that is about the date.

Q. After Mr. Spotswood made this determination, was there any problem remaining with reference to Core-Min-Oil arising out of this inconsistent core subject that you have described?

A. No, that was the principal problem which confronted us at that time.

(Testimony of Allan B. Ruddle.)

Q. Did Mr. Spotswood's determination solve that problem?

A. Well, it solved it in this way: that if we used an electric oven, or indirect fire oven, or hooded the cores we had in the oven, then the problem was solved.

Q. In other words, if I understand you, as long as you kept the gases of combustion away from the baking cores, you had no problem with those gases, is that correct? A. That is right.

Q. What type of cores resulted from the baking process of the Core-Min-Oil cores in direct fire ovens, or from the hooded core, or otherwise, where the gases were prevented from coming in contact with the core in baking?

A. The cores were pronounced good by the foundry people who examined them.

Q. Did you observe them yourself?

A. Yes, I looked at them.

Q. Were they consistently good, inconsistent, or what?

A. Every one that I ever saw baked that way was good. [226]

Q. Were any of those cores used to make castings? A. Yes, many of them.

Q. Will you state what you observed with reference to the castings?

A. As far as I could tell, they were perfect castings.

Q. What type of surface was on the casting?

A. They were very smooth.

(Testimony of Allan B. Ruddie.)

Q. How did the surface of those castings compare, for example, with the sample that was presented by the defendants here?

A. I will say this does not look like it at all; this is a very rough casting.

Q. Not at all like the casting that was obtained?

A. No; they wouldn't sell that casting at any of the foundries I was in.

Q. Were any of the castings made with Core-Min-Oil sold by any of those foundries?

A. Yes, nearly everything we poured was sold. They would take one of their core boxes they were working on, make a casting with this material, and it would go right in with the other lot and be sold.

Q. Was that true of the casting of the Union Diesel head?

A. Yes, because I followed it up to see what happened to it; wanted to show it again, and they told me it had been sold.

Q. Sold in the regular course of business?

A. That is right.

Q. There were some discussions by you in your cross examination of contacts with the American Brake Shoe & Foundry Company. On how many independent occasions, with reference to separation of time [227] rather than separate visits, did you have any experience with the American Brake Shoe Company?

A. Well, I remember that they came to our office, Mr. Peck's office in the Crocker Building, at one time.

(Testimony of Allan B. Ruddle.)

Q. This was before or after making of the contract?

A. This was before making the contract with the Shell Company. And we went over to their office—I think, if I remember right, their office was in the Russ Building—and we went there on several occasions.

Q. Do you have any means of fixing the date at which you dealt with the American Brake Shoe people on the first occasion?

A. We wrote them a letter.

Q. Have you located a copy of that letter?

A. Yes, I have.

Q. Is that the letter that you have reference to, Mr. Ruddle (handing document to witness)?

A. Yes; that is February 24, 1938.

Q. Does that refresh your recollection as to the date on which you were contacting the American Brake Shoe & Foundry Company on the first occasion?

A. Yes; I would say that we had been to see them several times when that letter was written.

Q. Do you recall this letter at the time it was written, the original of this letter?

A. No, I do not.

Q. Did you write it? A. No, I did not.

Q. You had nothing to do with it yourself?

A. No.

Q. Did you see it about that time?

A. Yes, I did—no doubt I did. I don't recall now.

(Testimony of Allan B. Ruddle.)

Q. You have no specific recollection?

A. No, I have not.

Mr. Hackley: I offer as Plaintiff's Exhibit No. 28 for identification the letter mentioned by the witness in his testimony.

(The letter referred to was marked Plaintiff's Exhibit No. 28 [228] for identification.)

Mr. Hackley: Q. Then do I understand from your testimony at a somewhat later date you had some further reference to the American Brake Shoe & Foundry Co. in your work?

A. Do you mean—Lydell Peck reported to me that they wanted——

Q. I believe you testified along that line yesterday, and if I understood you, this was a second occasion at a considerably later date, is that right?

A. Yes, that is right.

Q. And was fixed at the time related to Mr. Spiri in some way?

A. Yes. I went to Mr. McSwain—Lydell Peck told me—I think he told me Dave Wack——

Mr. Hackley: Q. Just tell us what you said to Mr. McSwain, Mr. Ruddle.

A. I told him that the American Brake Shoe Company had asked about this solution. I turned the inquiry over to Mr. McSwain and he said, "I had better tell Mr. Spiri about it." So we called on Mr. Spiri. He had an office in the same building. I told Mr. Spiri about it and he said he would go and see them.

Q. What was the approximate date of that?

(Testimony of Allan B. Ruddle.)₁

A. Well, it was during the time Mr. Spiri was working on this. It was very late—about two months, I should say, or three months before the contract was—we had a letter from Mr. McLaren. That would be next as to time.

Q. It was some time after the exercise of the option and before Mr. McLaren's letter attempting to cancel, is that correct?

A. Yes, that is right.

Q. You testified yesterday that you had made a comparison of the baking time of Union Diesel head cores made with Core-Min-Oil and made with Houghton Oil. Did you ever make any checks of baking [229] time, comparisons with other cores, that is, comparisons of cores made with Core-Min-Oil and cores made with other oils?

A. Yes; I think we had Quandt Oil and linseed oil, too, at the Macauley Foundry.

Q. What type of cores were tested and checked as to time?

A. Well, all sizes; that is, I think the largest core I ever made out of Core-Min-Oil was that Diesel head.

Q. Have you any notes or records at this time that you could produce relating to these checks on time?

A. I think I ran into, among my notebooks last night—that little book, I think, refers to it.

Q. Which one of these notebooks do you want?

A. I think it is this one (indicating). The note-

(Testimony of Allan B. Ruddie.)

book refers to the formula that I referred to this morning.

Q. What notebook have you in your hand? Let me check that, will you, please? You are looking at some notes in Defendants' Exhibit O for identification, in connection with your deposition taken by the defendants, is that right?

A. That is right.

Q. Will you call attention to the notes that you are referring to there, and we will find a reference to the page in some way?

A. Well, it gives the formula on the first page.

Q. Just read what you have there.

A. Seven gallons of sand, 1750 cc's of sand, solution of 125, and No. 2 A.P. emulsion 40 cc's, and water 65 cc's.

Q. Is the baking time there?

A. The baking time shows it was put in the oven 10:48, came out 11:03, 15 minutes for a pump runner. And then we made another the same with 1 B. That core was not made. And then a No. 2 emulsion, 16 minutes. No. 1——

The Court: Q. Where were these cores dried?

A. Dried in Macauley's Foundry. [230]

Q. What kind of furnace?

A. This was an open furnace at that time.

Q. Isn't it conceded that these cores cannot be dried in an open furnace?

A. Well, we couldn't tell. We put two in the same time, just alike, made just alike——

(Testimony of Allan B. Ruddle.)

The Court: We are here trying to determine the time it takes to dry the cores when it is conceded the ovens will not dry them properly. What are we spelling out of this thing?

Mr. Hackley: Q. Can you explain that to the Court, Mr. Ruddle?

The Court: Nobody can explain it, unless I have a wrong state of mind, being an old metalist.

Mr. Hackley: Q. That is correct, isn't it, Mr. Ruddle? A. Yes, that is correct.

Q. You did have occasions when your cores failed in direct fire ovens, and occasions when you were successful?

A. Yes; that happened all the time.

The Court: It is conceded, as far as the testimony here goes, that the only way you can dry these and do it successfully is do it with an electric oven, is that correct?

Mr. Aurich: That is quite correct.

The Court: There is no indirect fired oven here, is there, aside from the electric heat?

Mr. Hackley: Q. Mr. Ruddle, what do you mean by "indirect fire oven"?

A. That is where the gases from the fire can't get in contact with the core.

Q. What type of oven would that be? How would it be constructed?

A. Well, it would be lined with some material that would keep the gases away from the cores.

Q. You said yesterday, I believe, tin or some shield. [231]

(Testimony of Allan B. Ruddle.)

A. Yes; even a hood over it would keep them away, makes them successful.

The Court: But that type of furnace is not here.

Mr. Hackley: That is not in the Macauley Foundry.

The Court: Or anywhere else here; that is, so far as the testimony is concerned.

Mr. Hackley: Q. Mr. Ruddle, are you acquainted with the location of all types of ovens?

A. No.

Q. You merely know of the existence of different types? A. That is all, yes.

Q. You know that there are electric ovens?

A. Yes.

Q. And there are indirect fire ovens?

A. That is right.

Q. You have demonstrated that the cores could be made by hooding the cores, is that correct?

A. Yes, we did that.

Q. Now, one thing here: You called attention to the fact that in these notes, Exhibit O for identification, you found a reference to a specific formula. A. Yes.

Q. Will you call attention to which page of the notes that is by counting the pages? I will tell you: Mark the page with the letter "A". So that we get that identified, just read the text of that formula into the record, please.

A. "Made sample x. 1750 cc's sand, dry, 125 cc's solution, 40 cc's A. P. asphalt emulsion, 65 cc's of water, bake 15 minutes, made pump runner sam-

(Testimony of Allan B. Ruddie.)

ple, marked A. P., and core was marked X. This was covered with plumbago. Another one marked 1, covered with R. P. coating. They were poured with solid casting, with sample of Houghton Oil." That sample means a sample was run alongside of it.

Q. A sample was run in comparison?

A. Yes, that is right. "Two cores, one marked B, other AP, of pump runners, were poured 11/3/37, and two marked X, and 1, were poured 11/2/37." And there [232] is a notation on the bottom, "O.K."

Q. Are these notes in your handwriting?

A. They are.

Q. What does "O.K." at the bottom mean?

A. It means they were good castings.

Q. Will you mark the second page you read from there at "B," please?

A. (Witness marks on document.)

Q. These are your original notes, are they, kept in your handwriting, Mr. Ruddie?

A. Yes, they are.

Mr. Hackley: I offer as Plaintiffs' Exhibit 29 the page of notes identified by the witness, which are contained in Defendants' Exhibit O.

(The pages of notes referred to were marked Plaintiffs' Exhibit No. 29.)

Mr. Hackley: Q. Did you have any discussions with any representative of the Shell Oil Company prior to the making of the contract, Exhibit 5, about the fact that cores made with Core-Min-Oil

(Testimony of Allan B. Ruddle.)

could be baked only in electric ovens, indirect fired ovens, or if the cores were hooded?

A. Prior to making the contract?

Q. Yes. A. Yes, I think so.

Q. With whom? A. With Mr. McSwain.

Q. Can you tell us when any particular one of those discussions occurred, or the period in which they occurred, and tell us just what was said on both sides?

A. They had many discussions regarding fixing up the present ovens so that cores could be fixed in it. [233]

Mr. Hackley: Q. I will ask you, Mr. Ruddle, when this occurred, now, with reference to the time.

A. Well, I would say it started after Mr. Waller and Spotswood determined that the CO₂ gas hurt the core. Then there was a discussion about getting the foundries to fix their ovens, and I know in that connection Mr. McSwain said to me——

Mr. Aurich: I still haven't got the——

The Court: Q. That was after the contract was signed, was it?

A. Well, I think even prior to the contract being signed we were discussing that.

Mr. Hackley: Q. Mr. Ruddle, you fix one date of it as being prior—just after, or after Mr. Spotswood made the discovery of the CO₂, and if I remember your testimony, you correct me if I am wrong, you testified that that was in January or February, 1938, is that correct?

(Testimony of Allan B. Ruddle.)

A. That is right.

Q. So these conversations you are talking about are after that date. Now, is it before or after the signing of the contract on April 8, 1938?

A. Well, I wouldn't attempt to fix the time. We had so many conversations.

Q. Did you have any discussions prior to the signing of the contract with Mr. McSwain or with anybody else representing Shell, regarding the fact that the Core-Min-Oil cores could not be baked [234] in direct fire ovens where the gas combustion came in contact with the cores?

A. Oh, yes; that was prior to the signing of the contract.

Q. Just tell us about those discussions. What was said and what took place?

(To Mr. Aurich) Does that fix the time, Mr. Aurich?

Mr. Aurich: That fixes it satisfactorily for my point.

Mr. Hackley: You understand that this is fixed between the end of February, 1938, and the making of the contract in April.

Mr. Aurich: Yes, I understand.

A. Mr. McSwain said we would have to educate the foundries to see the value in this, the great saving in the making of castings, and that they would call upon the foundries and get them to fix their ovens. As he said, there were many foundries in the United States, McSwain did, that were electrically heated, and he would go into one district—

(Testimony of Allan B. Ruddie.)

he said that the way to do that would be to go into a district and get one foundry there to fix its ovens and adopt this, and that would cause the other foundries to follow suit because of the great saving in the manufacture of castings.

Mr. Hackley: Q. Did Mr. McSwain state to you that he recognized—now, this is before the contract was signed in fact—Core-Min-Oil cores could not be made in direct fire ovens where the gases of combustion come in contact with the cores?

A. Yes, that is right.

Q. And the Shell Oil Company entered into the contract nevertheless?

A. Oh, yes, that was—

Mr. Hackley: Mr. Aurich, you indicated you would like to interrupt here to bring in the additional material you now have.

Mr. Aurich: If it please the Court, counsel has agreed that we interrupt— [235]

The Court: I want him to get through. Here is a witness who was called Tuesday morning. It would be interesting, indeed, to read the whole record. It would be mighty interesting.

Mr. Hackley: Q. Will you state whether or not the moisture content of the sand used in making the cores has any influence on the baking time of cores made with Core-Min-Oil?

A. Yes; the more moisture there is in the sand, the longer time it takes to bake the cores.

Q. I believe you testified yesterday that you had developed formulas, but that you could not remem-

(Testimony of Allan B. Ruddle.)

ber precisely what they were after this time, for use with wet sand, is that correct?

A. Oh, yes, I tried wet sand, but I don't recall now what formula was used with wet sand.

Q. Were you able to make successful cores with wet sand with your formula?

A. Oh, yes; it just takes longer to bake them, is all.

Q. Is the formula which was given to you yesterday, and which you read from your notebook this morning, Exhibit N, and offered as Plaintiff's Exhibit 29, a formula for a dry sand core or a wet sand core?

A. That was for a dry sand.

Q. That is the same formula that is shown in your patent, Exhibit 1, is that correct?

A. That is right.

Q. Is it there directed to a dry sand core or a wet sand core?

A. To a dry sand.

The Court: Q. Dry sand, and you put water in it?

A. That is right.

Q. Why do you use dry sand?

A. Well, if you could determine the amount of moisture that is in the sand, then you would not need to put any water in it, but these were tests, and to be accurate about it, we added everything to dry sand so that we could have the check [236]

Mr. Hackley: Q. You started with a zero moisture content?

A. That was the reason for doing it that way.

Q. Do I understand the amount of moisture is one of compensation, so that you will have less

(Testimony of Allan B. Ruddle.)

moisture in the Core-Min-Oil if there is moisture in the sand? A. That is right.

Q. You have described the fact that the baking time of cores made with dry sand was generally about one-third of the baking time of like cores made with linseed oil. Have you ever made any tests to determine the comparative drying time of Core-Min-Oil cores made with wet sand in contrast with linseed oil cores? A. Yes, I have.

Q. Do you remember what the results of those tests were?

A. They were just longer, but I haven't any records now to show.

Q. With reference to the baking time of linseed oil cores made with wet sand, do Core-Min-Oil cores take a longer or a shorter length of time?

A. Oh, a great deal less than linseed.

Q. But, if I understand you right, more than dry sand cores?

A. Yes, just a little more than the dry sand.

Q. Depending directly on the amount of moisture present, is that is? A. That is right.

Q. Speaking of your solution, Mr. Ruddle, did you ever give the formula of that solution to anyone other than the representatives of Shell prior to the issuance of your patents, Exhibits 1 and 2?

A. No, I did not.

Q. You were referred yesterday to the Thomas patent, No. 1,561,956. A copy of it was offered in evidence by the defendants. Have you any records

(Testimony of Allan B. Ruddie.)

indicating when you first learned of the existence of the Thomas patent?

A. Yes; I notice in the file there a [237] copy of a letter.

Q. I show you a letter directed to you from my office, dated March 15, 1938, annexed to which is a copy of the Patent Office action of January 27, 1938, and ask if that refreshes your recollection as to when you first heard of the 'Thomas patent?

A. Yes, that is March 15, 1938.

Q. You received a copy of the patent with that letter, copy of the action annexed to the letter, at that time, did you? A. Yes, that is right.

Q. Within a few days, at least, of March 15, 1938? A. That is right.

Mr. Hackley: I offer as Plaintiffs' Exhibit No. 30 the letter identified by the witness, and as Plaintiff's Exhibit 31, the Office action annexed thereto, in which is mentioned the Thomas patent.

(The letter referred to was marked Plaintiffs' Exhibit No. 30 in evidence.)

(The Patent Office action referred to was marked Plaintiffs' Exhibit No. 31 in evidence.)

United States
Circuit Court of Appeals

For the Ninth Circuit. ✓

LYDELL PECK and ALLAN B. RUDDLE,

Appellants,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Appellees.

Transcript of Record

In Four Volumes

VOLUME II

Pages 497 to 995

Upon Appeal from the District Court of the United States
for the Northern District of California,
Southern Division

FILED

APR 13 1943

No. 10280

United States
Circuit Court of Appeals

For the Ninth Circuit.

LYDELL PECK and ALLAN B. RUDDLE,

Appellants,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Appellees.

Transcript of Record

In Four Volumes

VOLUME II
Pages 497 to 995

Upon Appeal from the District Court of the United States
for the Northern District of California,
Southern Division

(Testimony of Allan B. Ruddie.)

Mr. Hackley: Q. Yesterday you were shown Defendants' Exhibit Y and stated so far as you knew you had never seen that letter before, or at least any copy of that letter before, original or otherwise. This morning counsel for the defendants presented a letter, Exhibit Y-1, dated the following day. I want you to examine that letter and ask if you have seen either the original or a copy of that letter prior to the observation of this copy here, so far as you can recall?

A. I might have, but I don't recall now that I did.

Q. The general substance of the letter seems familiar, but you do not remember the document, is that correct? A. That is right. [238]

Q. You mentioned the fact that you obtained certain Government pamphlets from the Department of Commerce, and those were handed to Mr. Waller? A. Yes.

Q. Did they describe the core oil market generally?

A. Yes; it was on the amount of iron that was poured in the United States, and also the amount of oils, as I recall it.

Q. By "oil," you mean core oil? A. Yes.

Q. Can you identify those pamphlets in any way for the record?

A. Only that they were gotten out by the Department of Commerce, I think, and they were printed—little printed forms.

Q. Do you remember the name of it, either?

(Testimony of Allan B. Ruddle.)

A. No, I wouldn't recall.

Q. About what date was that you gave these to Mr. Waller?

A. I wouldn't recall the date. I know we gave him that together with that Foundry letter that we referred to. He returned them later, in an envelope of the Shell—mailed them to us.

Q. How much of your personal time did you devote to the Core-Min-Oil project between the time you first took it to Shell and the time you received Mr. McLaren's letter, Exhibit 10, on or about July 26, 1939?

A. Well, the early part of it, I devoted most of my time to it—in fact, I was always ready to go to the Shell whenever they wanted me.

Q. You were on call for Shell, were you?

A. Yes, at all times.

Q. What do you mean by the early part of the time?

A. Well, when Mr. Waller left I only went to see Mr. McSwain; I would only go fewer times to the Vulcan Foundry in Martinez with Mr. McSwain.

Q. But you continued on call during the entire year and a half, is that correct?

A. During that time—I don't know—I spent [239] an awful lot of time on it; I don't know how much.

Q. Yesterday, in referring to the number of indirect fire ovens in the United States in comparison with direct fire ovens, on your cross ex-

(Testimony of Allan B. Ruddle.)

amination, you said that the amount was small compared with the direct fire ovens. What did you mean by "small"?

A. Well, as I understand, there is about five percent of the foundry business, the total foundry business, on this Coast, and in the East there are a number of large foundries that have electric ovens. So my estimate would be ten percent of the market in electric ovens, in indirect fire ovens.

Q. You spoke of the fact on cross examination yesterday that the Core-Min-Oil core sand, prior to the core making, tended to dry on the bench. You used the word "rapidly," or some such phrase, in referring to the drying of that product on the bench. Will you tell us what you mean, in number of minutes or hours, whatever it may be, what you meant by "rapidly"?

A. Well, at the Macauley Foundry we would make up an amount of Core-Min-Oil with sand, and if we did not put wet sacks on it, it would stay in there for two hours or longer, depending on the humidity of the air; but if we put sacks on it, we had it all day, when we used it.

Q. It had an indefinite life if you covered it, is that correct?

A. If you keep the air away from it it would last indefinitely, yes.

Q. You described yesterday that your product, Core-Min-Oil, had to be marketed in two containers, because of the fact that it could not, so far as you

(Testimony of Allan B. Ruddie.)

knew, or know, be successfully held in a permanent emulsion which would not break down on standing or transportation. Did Shell know of this two-container situation before the contract of April 8, 1938?

A. Yes; it is in the contract, described in the contract. [240]

Mr. Aurich: I move to strike out the witness' answer as to what is described in the contract. The contract is the best evidence of what is contained therein.

Mr. Hackley: I agree that is true.

Q. Mr. Ruddie, what did you mean by the phrase "The foundry fit the core oil"?

A. Well, the core oil would have to be put in containers, or some method of keeping the air away from it, while it was on the benches, if it was used on the benches for any great length of time. That is one thing the foundry would have to do.

Q. I understand from what you said to them, that linseed oil cores had to be covered, too.

Mr. Hackley: Q. Is that correct, Mr. Ruddie?

A. Well, yes, especially if they built the linseed cores up with tux and other things that they put in it, that causes it to dry fast, too. [241]

Q. Are other things added to linseed oil cores?

A. Yes, there are many things. The Vulcan Foundry told me that they had at least 16—

Q. Just state what you observed.

A. I observed at the Vulcan Foundry they had

(Testimony of Allan B. Ruddle.)

at least 16 things they put in the cores, depending on the kind of casting they wanted to make.

Q. Did they put 16 different things into each core?

A. No, no, it depended on the casting. Some they put tux in alone. Tux is a product of corn-starch that gives it a smooth core. They have silicate sand, they call it. It is a very fine silicate dust. I don't recall the names of a great many of them, but they did build these core solutions up with many products they put in that are not required to be put into Core-Min-Oil.

Q. Do I understand, then, in making up a linseed oil core, that you have not only the sand in the linseed oil, but you have to have other ingredients?

A. That depends on what you want. They do use linseed oil straight for some purposes.

Q. On other occasions they have to have other ingredients?

A. Yes, that is right.

Q. What did you mean by the phrase, "The foundry must fit the oil, the core oil"?

A. With Core-Min-Oil, the ovens would have to fit the Core-Min-Oil. You couldn't bake these cores in an open furnace unless you fixed the oven.

Q. That would only apply to a direct fire oven foundry?

A. That is right.

Q. Was the Shell Company aware of these facts prior to the making of the contract, Exhibit 5? [242]

Mr. Aurich: I object to that as calling for the opinion and conclusion of this witness.

(Testimony of Allan B. Ruddie.)

The Court: The objection is sustained.

Mr. Hackley: Q. Did the Shell Company or any of its representatives discuss with you these facts prior to the making of the contract, Exhibit 5?

A. Yes, Mr. McSwain did, and Mr. Waller, and Mr. Spotswood talked about the gas.

Q. Did they talk about this matter of keeping the core sand covered on the benches before the making of the contract?

A. Yes, that was all talked about prior to the contract.

Q. You discussed yesterday the price factor of Core-Min-Oil in comparison with the price of other core oils, and took as an example linseed oil. And if I remember the testimony of your counsel, of Mr. Aurich, counsel for the defendants, and yourself—I do not mean by that his testimony; I mean his statements—you and he arrived at a hypothetical situation where Core-Min-Oil was priced at 30 cents a gallon and linseed oil at 90 cents a gallon.

(To Mr. Aurich): Am I correct in that statement, Mr. Aurich, as to your figures?

Mr. Aurich: You will have to ask the witness.

Mr. Hackley: I do not want to misquote either of you. I do not want to take the time to turn to the record, although I can do it.

Q. If I understand you there—correct me if I am wrong—if the price of Core-Min-Oil on the market is one-third of linseed oil, the price of enough linseed oil and Core-Min-Oil to make the

(Testimony of Allan B. Ruddle.)

same core would be, so far as core oil is concerned, the same, is that correct?

A. Yes; using those figures it would be the same.

Q. If the price of Core-Min-Oil were higher, the linseed oil [243] remained constant, then the cost of Core-Min-Oil for the same core would be higher, is that correct? A. Yes.

Q. And conversely, lower?

A. That is right.

Q. Is that gallonage price the only factor you had in mind when you stated in your testimony that Core-Min-Oil had an advantage of being lower in cost to the user or foundry man?

A. No, the principal value in core oil is in the drying—in the baking time. That would save a foundry about two-thirds of its fuel costs for baking.

Q. That would be a clear saving, independently of the gallonage price comparison of the product, is that correct?

A. That is right. That is the biggest expense in a foundry, the fuel for baking.

Q. Was that point ever discussed by you with representatives of Shell?

A. Yes, a thousand times.

Q. Before and after the contract, both?

A. Yes, both before and after.

Q. With whom in the Shell organization?

A. Mr. McSwain, Mr. Waller, Mr. Spotswood.

Mr. Aurich: I think this has all been covered

(Testimony of Allan B. Ruddle.)

on direct, and I haven't questioned the fact that Mr. McSwain mentioned those things.

The Court: Get through with this witness.

Mr. Hackley: I am just at the end, your Honor.

[244]

Q. In the course of your cross examination you were presented with a document and asked to read or quote from portions of it. It was identified as Defendants' Exhibit C for identification. I ask you what that document comprises.

Mr. Aurich: I object to that, your Honor. The question asked the witness to read that document. On objection that question was withdrawn, and a question was framed asking him to use the notes for the purpose of refreshing his recollection and tell what the substance of the conversation referred to in his notes was.

Mr. Hackley: All right, I will modify my question in conformity with your statement, Mr. Aurich. I think you know your questions better than I do.

Q. What is that document?

A. It is a memorandum of the conversation I had with Mr. McSwain June 23, 1939.

Q. Is that made in your own handwriting?

A. It is.

Q. When was it made with reference to the date appearing on it? A. June 24, 1939.

Q. And that is one of the sets of notes that you gave to the defendants in the course of your deposition earlier in this proceeding? A. Yes.

(Testimony of Allan B. Ruddle.)

Q. And was known there as Defendants' Exhibit C for identification; is that right? A. That is right.

Q. You used this memorandum to refresh your recollection for certain testimony you gave yesterday relating to the Axelson Foundry visit?

A. That is right.

Mr. Hackley: I offer as Plaintiffs' Exhibit 32 the notes of the witness——

Mr. Aurich: Objected to as immaterial.

Mr. Hackley: ——as the source of the information from [245] which he testified yesterday.

Mr. Aurich: And on the further ground that a document used by the witness to refresh his recollection is not admissible in evidence unless requested by the opposing party.

Mr. Hackley: If your Honor please, I want to quote from the record yesterday as to just what happened. Page 196, line 11, Mr. Aurich asked the witness:

“Q. Mr. Ruddle, use these notes you made on June 24, 1939 and tell me exactly what Mr. McSwain told you about the Axelson Foundry at that conversation, as is disclosed by your notes.”

Mr. Aurich: I submit, your Honor, that the notes speak for themselves.

The Court: Let the notes go in if they serve any purpose.

(Testimony of Allan B. Ruddie.)

(The document referred to was marked Plaintiffs' Exhibit No. 32 in evidence.)

Mr. Hackley: Q. I show you Defendants' Exhibit E for identification and ask if that again is a set of your notes. A. It is.

Q. In your handwriting? A. It is.

Q. Prepared at what date?

A. July 19, 1939.

Q. At or about the time of the events mentioned in the notes? A. That is right.

Mr. Hackley: These notes were similarly used to Exhibit 32. I offer the notes of the witness as Exhibit 33. They are Defendants' Exhibit E for identification.

Mr. Aurich: We make the same objection; on the further ground that they are self-serving declarations.

The Court: Same ruling, subject to a motion to strike. The notes are going in subject to a motion to strike.

(The document referred to was marked Plaintiffs' Exhibit [246] No. 33 in evidence.)

Mr. Hackley: Q. Mr. Ruddie, yesterday you were called upon to refer to your notes entitled "Statement of A. B. Ruddie," Plaintiffs' Exhibit 1 for identification to your deposition. The cross examiner asked you various questions; they are at page 200 of the record. Were these notes made up by you personally? A. They were.

Q. For what purpose?

(Testimony of Allan B. Ruddie.)

A. Well, I just tried to write a statement of what I remembered—some of the things, anyway, that I remembered about it. This was written quite a while after.

Q. In the nature of a general synopsis?

A. That is what it was, yes.

Q. For whom was that written, do you remember?

A. Well, possibly for you, but I know I wrote up the statement without being asked to do it. I know that.

Mr. Hackley: To illustrate what the witness was referring to in his testimony in cross examination yesterday, referring to the request of counsel, I offer as Plaintiffs' Exhibit 34 the notes identified by the witness, this being Plaintiffs' Exhibit 1 for identification.

Mr. Aurich: I have no objection to the reception in evidence of the exhibit for the sole and only purpose referred to by counsel. If it is received for any other purpose I make the same objection as to the preceding exhibit.

Mr. Hackley: To reassure you, Mr. Aurich, that is the purpose.

The Court: I will admit it subject to a motion to strike.

(The document referred to was marked Plaintiffs' Exhibit No. 34 in evidence.)

Mr. Hackley: Q. You were called upon yesterday to refer to the Watson Solution or Watson

(Testimony of Allan B. Ruddle.)

product, Mr. Ruddle. Is the [247] solution of Core-Min-Oil the same as the Watson product you referred to?

A. They use the same chemicals but they use it differently. The Baume of the solution I think is about 15.

Q. The qualitative formula is different; is that right? A. Yes, that is right.

Q. Is the procedure of making the solution which you used in Core-Min-Oil the same as that of Watson?

A. No, it is a little different, but practically the same.

Q. Have you any records referring to what is the Watson Solution or Watson product you were referring to?

A. You mean the Watson patents?

Q. For the purpose of illustrating your testimony I show you copies of two patents issued to Joseph Rigby Watson, Nos. 1,900,211 and 1,900,212. Are those the patents you refer to?

A. Yes, that is right.

Q. And describe what you refer to as the Watson product? A. Yes, that is right.

Mr. Hackley: If you haven't copies of those patents I will be glad to give them to you.

Mr. Aurich: I will be able to get them, Mr. Hackley.

Mr. Hackley: To illustrate the witness' testimony, I offer as Plaintiffs' Exhibit 35 Watson pat-

(Testimony of Allan B. Ruddie.)

ent 1,900,211 and as Plaintiffs' Exhibit 36 Watson patent No. 1,900,212. Both of these patents were issued on March 7, 1933.

Mr. Aurich: I object to them on the grounds of utter lack of materiality; on the further ground that no foundation has been laid in that there are a number of formulas and solutions referred to in these two patents and the witness has not been able to identify which, if any, of these solutions is the [248] one referred to by him.

The Court: The objection will be sustained.

Mr. Hackley: Q. Mr. Ruddie, I show you first Watson patent No. 1,900,211 referred to by you, and ask if you find therein any formula which you have referred to as a Watson product in your cross examination, particularly any formula that typifies what you were referring to.

A. This does not give the Baume of the Watson solution, but it has some of the same chemicals in it.

Q. Does this illustrate what you understand to be the Watson product? Do these patents fully disclose it?

A. Well, I wasn't able to make it from these patents, but I did make a solution.

Q. You made a solution?

A. He has the description there of how to make it, but I was unable to make it under this.

Q. I am not talking about the Core-Min-Oil solution; I am talking about the Watson patents.

(Testimony of Allan B. Ruddie.)

A. I am talking about the Watson patents.

Q. You weren't even able to make the Watson formula? A. No, I couldn't.

Q. Do these patents refer to what you understand to be the Watson product?

A. Yes, they are.

Q. Can you identify any one of these formulas being the Watson product, or are all of them what you consider the so-called Watson product?

A. Yes, they are all the Watson product; they have chryolite in there and have a number of things.

Mr. Hackley: I offer these solely for the purpose of illustrating the witness' testimony and for no other purpose.

The Court: The objection will be sustained.

Mr. Hackley: May I offer the patents then for identification [249] respectively as Exhibits 35 and 36 for identification.

(Patent 1,900,211 was marked Plaintiffs' Exhibit No. 35 for identification, and Patent 1,900,212 was marked Plaintiffs' Exhibit No. 36 for identification.)

Mr. Hackley: Q. You testified this morning regarding the furnishing of a solution comprising the ingredients of your Core-Min-Oil solution, or I should say solution in Core-Min-Oil, and either a red oil or a dry mineral oil in it, giving that solution to Mr. McSwain, and he in turn giving it to Mr. Ames of the Shell Company; is that correct?

A. Yes. I wouldn't recall what was in that solu-

(Testimony of Allan B. Ruddle.)

tion. It had some emulsifying agents in it. I couldn't tell what all was in it.

Q. Was that given to Mr. McSwain before or after the negotiations relating to Core-Min-Oil commenced? A. That was prior.

Q. How long prior, Mr. Ruddle?

A. I wouldn't be able to tell you, but it was a month or two prior; possibly longer than that. I am unable to fix any time.

Q. Did that product have anything at all to do with Core-Min-Oil? A. No, it did not.

Q. Were you ever advised at any time that the Shell Company had discontinued the attempts to make a core oil with your formula and had changed their efforts to try to make a core oil with sodium silicate and asphalt emulsion alone?

A. Only when Mr. McSwain told me at that time.

Q. When did he tell you that, approximately?

A. Well, that was prior to the McLaren letter: that they had been able to do the same thing with sodium silicate, and they had also made another solution.

Q. Is that the first time Mr. McSwain mentioned it to you, as you remember it?

A. Well, it seemed to me that we had some [250] samples that were given to me; they told me that they had sodium silicate in it, but I never knew—no one knew what were in the samples.

Q. The first time you had any indication that

(Testimony of Allan B. Ruddle.)

Shell was trying to abandon the efforts with Core-Min-Oil and transfer over to a core oil of sodium silicate and asphalt emulsion was at this conference with Mr. McSwain just before the McLaren letter?

A. No; I knew that Mr. Spotswood was running some tests on sodium silicate to determine whether or not they were hydroscopic. I knew that.

Q. Were you informed by Mr. Spotswood about the results of these tests?

A. I don't recall whether I was or not, but I do know that I saw some cores that Mr. Waller brought in, and he told me it was made out of sodium silicate, but he wasn't sure of the fact—that it was made at the Shell Development laboratories, and he didn't even know then what was in it.

Q. The conversation that you referred to with Mr. McSwain a moment ago, was that the conversation just prior to the McLaren letter in which he told you that Shell was going to try to abandon this project?

Mr. Aurich: Objected to as leading.

Mr. Hackley: I am just trying to identify the conversation.

The Court: Objection sustained.

Mr. Hackley: Q. Mr. Ruddle, what was the conversation with Mr. McSwain with reference to the time that you referred to?

(Testimony of Allan B. Ruddle.)

A. Well, it was just prior to that letter of McLaren's, which was on July 26, 1939.

Q. What else took place in that conversation?

A. Well, he told me that the Shell Company had been able to do the same [251] thing that I could do with this solution with sodium silicate, and that also they had been able to make up a solution out of albino asphalt and some——

Mr. Aurich: I don't know what this is redirect of, I am sure.

Mr. Hackleff: I am just trying to identify that conversation.

Mr. Aurich: It was all gone into on direct; I didn't talk about this conversation.

Mr. Hackley: I am just trying to identify a date.

The Court: I understand you object?

Mr. Aurich: Yes, your Honor; I am sorry. I object to it on the ground that it is not redirect.

The Court: Objection sustained.

Mr. Hackley: Q. How long prior to the McLaren letter do you mean this conversation took place, Mr. Ruddle?

A. Possibly two months; maybe less time.

Mr. Hackley: That is all.

Recross Examination

Mr. Aurich: Q. I now show you a letter dated San Francisco, California, December 17, 1937, addressed to the American Bitumuls Company, which is signed A. B. Ruddle and J. Lydell Peck, and ask

(Testimony of Allan B. Ruddie.)

you if you can identify the signatures to that letter.

Mr. Hackley: I might say I have never seen this document [252] before. That is why I am taking the time to read it, Mr. Aurich.

A. Yes, that is my signature and that of Lydell Peck.

Mr. Aurich: Q. You wrote this letter to the American Bitumuls Company on or about the date it bears? A. Yes, I think so.

Q. I call your attention to the first paragraph of this letter, which reads:

“We have read the enclosed contract dated December 16, 1937 and left with us on December 17, 1937, also the survey signed by K. N. Cundall accompanying the same.”

And as soon as your counsel has finished inspecting the document which he has in his hand, I will show it to you and call your attention to the fact that it has a typewritten signature at the end corresponding to that on the first paragraph of the letter to which I have referred, and will ask you if you recall receiving that survey, or report, I should say.

(Addressing the Court): I believe there will be just one more question following this, your Honor, so I will stay within my two or three.

So that the Court will not unduly criticize counsel for handing this memorandum to plaintiffs' counsel at this late date, I think perhaps I might explain that this document just came into my

(Testimony of Allan B. Ruddle.)

hands this morning. Before I could obtain it, it was necessary for me to procure the issuance of a subpoena duces tecum to the American Bitumuls Company.

Mr. Hackley: I might say, Mr. Aurich, all I am attempting to do is to just scan this to get the general text of it; I can't pretend to read a report like this under these circumstances.

May I see the letter? [253]

Mr. Aurich: Yes (handing letter to Mr. Hackley).

Now, will you read the latter part of the question to the witness so that he will understand what he is being interrogated about, please, Mr. Reporter—or do you understand the question?

The Witness: Yes, I think so. Yes, we received that.

Mr. Aurich: I now offer in evidence the letter referred to by the witness dated December 17, 1937 from Mr. Ruddle and Mr. Peck to the American Bitumuls Company, and ask that it be marked Defendants' Exhibit Z, and I now offer as Defendants' Exhibit AA the report referred to in the letter which has been identified by the witness. I might say the only purpose of the offer is to impeach the testimony of the witness, who testified that he had not received any report of any survey or any investigation by the American Bitumuls Company, and this document Defendants' Exhibit AA is a report from Mr. Cundall of the American

(Testimony of Allan B. Ruddie.)

Bitumuls Company of the results of work done by him in foundries and which was transmitted to these plaintiffs.

Mr. Hackley: If your Honor please, I object to the offer of the letter upon the ground that it is incomplete. The letter referred to an "enclosed contract dated December 16, 1937, and left with us on December 17, 1937." The letter is otherwise, as far as I am concerned, identified. I object to the offer of the document entitled "Core Oil Survey," for the reason that it is not properly identified; no proper foundation has been laid; and despite what counsel has said, there is no evidence that I have seen or heard—perhaps the witness said it and I didn't hear it—that Mr. Cundall was somebody connected with the American Bitumuls Company.

Mr. Aurich: I will withdraw the part of the statement to the Court that Mr. Cundall was connected with the American [254] Bitumuls Company.

Mr. Hackley: I make my objection first to Exhibit Z for lack of completeness of the document.

The Court: Objection overruled. I will allow both of them for the limited purpose offered.

(The documents referred to were marked respectively Defendants' Exhibit Z and AA in evidence.)

Mr. Aurich: No further questions of this witness.

May I request, Mr. Hackley, with the permission

(Testimony of Allan B. Ruddle.)

of the Court, that we be permitted to substitute photostatic copies of the last two exhibits?

Mr. Hackley: Will you furnish copies to us?

Mr. Aurich: We will furnish copies to you.

Mr. Hackley: Yes, if you will furnish copies to me I have no objection.

Mr. Aurich, have you any evidence of where the balance of this communication is? Did your subpoena go to that?

Mr. Aurich: No.

Mr. Hackley: Do you have a copy of your subpoena?

Mr. Aurich: I don't know whether I have or not.

Mr. Hackley: I would like to inspect it during the noon recess.

If your Honor please, this document refers to an enclosure which is not provided, although there are other enclosures that are.

The Court: The witness on the stand identified it.

Further Redirect Examination

Mr. Hackley: Q. Mr. Ruddle, do you recall receiving a contract from the American Bitumuls Company on December 17, 1937?

A. Yes, we did. [255]

Q. Is that an executed agreement?

A. No, it was not an executed agreement. We were negotiating with the American Bitumuls Company for a contract, and when we received the

(Testimony of Allan B. Ruddle.)

contract it was so small, what they had agreed to do, that we put it in an envelope and sent everything back.

Q. Did you keep a copy of the document which they sent to you, or do you remember?

A. No, I don't recall any document at all. We sent everything back that came to us, as I recall it.

Mr. Hackley: I don't want to take the time of the Court to examine the witness on this point at this stage. I have here three documents, any one of which may be the document referred to in that letter. I would like to reserve the right to ask the witness about that after the noon recess. That is the only point that I have left with this witness.

The Court: You may examine now. Let's conclude with this witness.

Mr. Hackley: I have concluded with the witness.

The Court: All right. Step down. Call your next witness. [256]

Mr. Hackley: The next step proposed for the plaintiffs' case is to proceed to present to your Honor a group of five or six depositions which have been taken in advance of the trial and over the period of the last year with the thought of reducing a great deal of the evidence which would normally be taken from the witness stand here to deposition form, thereby saving some of the time before your Honor. I think that the depositions can be expeditiously and promptly read into the

record here in a way that will present the principal facts which are disclosed therein to your Honor.

The first deposition which I wish to proceed with is the deposition of Arthur C. Waller, whose name has come into this record. I will offer as Plaintiffs' Exhibit 37 the deposition of Mr. Waller, and as I proceed through the deposition, will offer the exhibits which are referred to in the deposition and identified therein successively as exhibits of the plaintiff in the order in which they appear.

Mr. Aurich: The defendants object to the introduction in evidence of the deposition just offered, for two reasons, one of which is sound legally, and the other of which is in the discretion of the Court. The one I make in the discretion of the Court is this: Mr. Waller is an employee of the Shell Oil Company, Incorporated, one of the defendants. He is at present in San Francisco staying at the Clift Hotel, I believe, and he will be a witness called on behalf of the defendants in their case. Therefore, in the first place, the reading of this deposition into the record by the plaintiffs is going to do nothing but needlessly cumulate the evidence that will have to [257] be produced, because, of course, the defendants have a right to produce their evidence in their own way. Secondly, and more to the point, is the fact that this offer of this deposition is not—rather, this deposition is not receivable in evidence under the provisions of Rule 26(d) of the Rules of Federal Civil Procedure. I don't know whether your Honor

is familiar with that, or whether you care to have me read it to you.

The Court: Read it.

Mr. Aurich: Subparagraph (d) commences as follows:

“At the trial or upon the hearing of a motion or an interlocutory proceeding, any part or all of a deposition, so far as admissible under the rules of evidence, may be used against any party who was present or represented at the taking of the deposition or who had due notice thereof, in accordance with any one of the following provisions:

“(1) Any deposition may be used by any party for the purpose of contradicting or impeaching the testimony of deponent as a witness.”

Obviously, that is not this case.

“(2) The deposition of a party or of anyone who at the time of taking the deposition was an officer, director, or managing agent of a public or private corporation, partnership, or association which is a party may be used by an adverse party for any purpose.”

Mr. Waller, as the record shows, is a salesman employed in the asphalt department of the Shell Oil Company, and therefore does not come within that provision.

“(3) The deposition of a witness, whether or not a party, may be used by any party for any purpose if the Court finds: 1, that the

witness is dead;" ——That has not been [258] established here, and I trust Mr. Waller will not die before the case is concluded—— "or 2, that the witness is at a greater distance than 100 miles from the place of trial or hearing, or is out of the United States," et cetera, et cetera.

Now, that is the provision of the rule on which I rely and which makes the deposition of Mr. Waller inadmissible. Mr. Hackley may reply, quite logically, that he has no proof that Mr. Waller is not in San Francisco because Mr. Waller is a resident of Seattle. However, in that connection, as an officer of the court, I take it my word is good, and I am perfectly willing to be sworn and establish those facts. And, furthermore, I am more than willing to agree that if I do not produce Mr. Waller here and take his testimony and produce him for cross examination, then of course his deposition may be used.

And I might say that that same objection, with minor variations, will go to the offer of all of the depositions that the plaintiffs have in mind.

Mr. Hackley: Your Honor, this matter takes me completely by surprise. I had no advance notice other than that two or three minutes before your Honor came on the bench, in informally chatting with Mr. Aurich, he mentioned the fact that he was going to object to this deposition or these depositions on this ground. I had no advance notice of any of these facts. While I have no reason to

doubt Mr. Aurich's word in any way as to what he has said about Mr. Waller's being present in San Francisco, I want to call attention of the Court to the fact that Mr. Waller testified that his residence was 8258 15th Avenue Northeast, Seattle, Washington; that his business address is care of Shell Oil Company at 1219 Westlake Avenue North, Seattle; that his occupation was civil engineer in the Seattle [259] office of the Shell Oil Company, Incorporated, thus identifying himself. The deposition of the witness was taken because the witness was resident more than one hundred miles from the place of trial of this case. The deposition was taken for that purpose and has been presented to your Honor with that in mind, and was a part and is a part of our regular presentation of evidence in this case.

Now, at this late date counsel will try to prevent our presenting this testimony, validly taken and properly taken, of a witness who within the wording of Rule 26 (d), subdivision 3, part 2, is, or at the time of its taking was clearly admissible.

Now, I am frank to say that this matter comes on as a complete surprise, and I haven't before me authorities as to how the courts have interpreted the second subdivision of Section 3 of paragraph (d) of Rule 26. I don't know whether that word "is" refers to the fact that the witness is at a greater distance than one hundred miles from the place of trial—refers to the time of trial or the time of the taking of the deposition. I am reasonably certain, however, that any fair interpretation

of the rule would provide that the test would be the place of the witness at the time of the taking of the deposition, and that, certainly, if counsel intended to claim that the witness was present and available he should have done one of two things here: Either he should have had Mr. Waller in the courtroom when this deposition was to be presented, or he should have given the plaintiffs here notice of the fact that he intended to make Mr. Waller available for testimony at the time of the trial.

The Court: Is he available now? [260]

Mr. Aurich: Well, right this minute, your Honor? Is that what you mean?

The Court: Yes.

Mr. Aurich: I can find out for you in just about five minutes. I know that he is here in San Francisco; I have an appointment with him in my office.

The Court: Temporarily I am going to sustain the objection to this. You may renew your offer later on.

Mr. Hackley: My problem, your Honor, is—and this I am deeply apologetic to the Court about—is that I was not prepared with any other evidence to present during the fore part of this afternoon.

The Court: What evidence, if any, have you?

Mr. Hackley: I have other witnesses.

The Court: Who are they? The record is here. Proceed.

Mr. Hackley: Yes. I have coming from the Macauley Foundry in Berkeley two of the core-

makers who work at that foundry and worked during all of these experiments with Core-Min-Oil and who can speak to us as experts who have worked with Core-Min-Oil on the subject of Core-Min-Oil, its attributes and values. I could probably arrange to have these gentlemen here in court to testify in whatever length of time it takes to drive over to the foundry and back, assuming that I can get them off duty this afternoon, and I believe it can be done.

The Court: What other testimony have you?

Mr. Hackley: I had planned, with the depositions which are presented to your Honor, and with the testimony of these men, to rest the plaintiffs' pending case.

Mr. Aurich: In justification of defendants' position, your Honor, I may say that this deposition of Mr. Waller is not [261] the only deposition of the defendants' employees taken by plaintiffs. They proceeded with a rather elaborate, thoroughgoing discovery program. They took the depositions of witnesses residing right in this locality, for example in Oakland and Alameda and in Contra Costa County, all of which persons are subject to the subpoena of this court to be here now. And if Mr. Hackley had desired the presence of any of those witnesses and had so advised me, I would have had all of them here for him at any time he wants; and I will produce any witness in the employ of the Shell Company that is available at any time that is agreeable to Mr. Hackley or to the Court,

if I can have just a few minutes' notice or sufficient notice to get them here.

Mr. Hackley: To clarify the matter, your Honor, it wasn't my plan to offer, except with leave of counsel, the depositions of witnesses who did not fall within the meaning of the rule at this time; but it was my opinion, and it is now, based upon the authorities as I understand them and on the rule, that I am entitled to offer not only the deposition of Mr. Waller but I am entitled to offer at this time the deposition of John Floyd McSwain. And so that we may discuss the matter formally on the record, I would like, as long as I understand your Honor has sustained the objection for the time being to Mr. Waller's deposition, to offer as Plaintiffs' Exhibit 37——

The Court: Mr. McSwain is available too, is he?

Mr. Aurich: Yes, your Honor.

The Court: Same ruling.

Mr. Hackley: If your Honor please, I would like to say this: Mr. McSwain falls into a different class in the rule altogether.

The Court: In what respect? [262]

Mr. Hackley: Mr. McSwain is a managing officer of this corporation, as the testimony shows and as he admits in his deposition,—the manager of the asphalt division of the company.

The Court: Very well; that makes no difference to me now. At this time I am sustaining the objection. I am governing the order of proof here and the manner in which the case is presented. For the

purpose of the record I will sustain it at this time.

Mr. Hackley: Then I will, if I may, just to complete the record, offer for identification as Exhibit 36——

The Court: Let both of them be admitted.

Mr. Hackley: Mr. Waller's deposition will be offered as Exhibit 37 for identification, and Mr. McSwain's deposition as Exhibit 38 for identification.

(The deposition of Mr. Waller was marked Plaintiffs' Exhibit No. 37 for identification, and the deposition of Mr. McSwain was marked Plaintiffs' Exhibit No. 38 for identification.)

(Plaintiffs' Exhibit No. 38 for Identification, the deposition of John F. McSwain, is set out at page 1046 of this printed record.)

Mr. Hackley: Do I understand that it is your representation, Mr. Aurich, that Mr. Zublin, Mr. Wright and Mr. Spotswood are all now resident within the jurisdiction of this court and within one hundred miles of this courtroom?

Mr. Aurich: That is quite correct; and each one of those named witnesses will appear as a witness on behalf of the defendants whether they are called by the plaintiffs or not.

Mr. Hackley: And that each one of those individuals is available and will be produced, if I request it, without the necessity of a subpoena, or must I subpoena them?

Mr. Aurich: Each of those witnesses, as well as any other witnesses that I can produce for you that are employed by the [263] Shell Company, will be produced without the necessity of any subpoena whatsoever.

Mr. Hackley: As I say, your Honor, that leaves me at this moment wholly and unexpectedly,—because I have sincerely tried to interpret these rules—they are new rules and very largely uninterpreted except as your Honor has done it here—it leaves me without any witness to present at this point.

The Court: Aside from the two coremakers, that is the testimony which you will have in chief?

Mr. Hackley: Yes, your Honor.

The Court: They can be called out of order, can't they?

Mr. Hackley: I suppose I will have no serious objection to it except on the motion——

The Court: I am anxious to get rid of this case. You asked for four days. Tomorrow will be the fourth day.

Mr. Aurich: I don't believe, your Honor, that I have ever represented to the Court that this case would take four days. I am sure no one on behalf of the defendants has ever made that representation.

Th Court: I am quite sure that someone was here and made the representation to me that this case would take four days.

Mr. Aurich: I am not doubting that statement

at all, your Honor; I am merely saying that I am quite sure no representation——

The Court: Just think; we are here now on the afternoon of the third day of this hearing and we have heard one witness.

Mr. Aurich: That is right.

The Court: Proceed and call your witnesses.

Mr. Aurich: All right, your Honor.

Mr. Hackley: Without prejudice, your Honor, to calling these coremakers that I speak of as witnesses, either out of [264] order or in rebuttal—I think it would be adequate to call them in rebuttal for the plaintiffs—I will rest the plaintiffs' opening case. And that, I assume, is in line with your Honor's wishes in that direction.

The Court: That is all right, just so the case goes forward; that is all I am interested in.

Mr. Aurich: At this time the defendants desire to make a motion to dismiss.

The Court: Before you start making your motion to dismiss, the testimony isn't all in.

Mr. Aurich: I understood Mr. Hackley to say that he had rested his case, your Honor.

The Court: Yes.

Mr. Hackley: With reservations.

The Court: With reservations as to two witnesses.

Mr. Aurich: I am quite satisfied these two witnesses cannot affect the points that I want to make, your Honor.

The Court: Proceed.

Mr. Aurich: I am perfectly satisfied to have your Honor take the motion under submission until these two witnesses have testified.

The Court: Very well.

Mr. Aurich: My motion to dismiss——

Mr. Hackley: Before you start, Mr. Aurich, may I just make one additional statement, so that you are not misled by my position?

Mr. Aurich: Yes.

Mr. Hackley: I am also reserving the right to call these other witnesses whose depositions have been taken, because that is a part of my opening case; just the fact that I am [265] caught by this surprise that I am unable to present them——

The Court: There is nothing unusual about Mr. Hackley's presentation, I know, at the proper time. Proceed with the case.

Mr. Aurich: It will be all right for me to proceed with my case?

The Court: Yes.

Mr. Aurich: Thank you.

My motion to dismiss is based under the provisions of Rule 41(b) and is made on behalf of both defendants, and the grounds are these: that assuming all the facts that have been established in plaintiffs' opening case to be true, nevertheless the plaintiffs are not entitled to any relief herein for the following reasons:

First, there can be no injunction issued by this Court against either of the defendants as to the secrecy or alleged secrecy of any disclosure which may have been made by Mr. Ruddle to the defend-

ants, for the reason that the subject matter of those disclosures is now contained in United States letters patent which are public knowledge and known to everyone who reads the patents.

Secondly, the complaint asks for specific performance against both of the defendants. Under the authorities the contract, on its face, is one which is not capable of specific performance, because it calls for a series of acts to be performed over a period of years, the doing of those acts requiring special skill, services and attention; and the authorities are uniform that under those circumstances there can be no decree for specific performance.

Third, we move to dismiss on behalf of both defendants, [266] because, assuming the facts herein to be true, the plaintiffs have not established any damage or any measure of damage by Shell's alleged breach of this contract.

As to the Shell Development Company, I move that the case be dismissed as to it because, in addition to the reasons I have enumerated, the Shell Development Company was not a party to the contract, and therefore no relief sought here can be awarded against it.

The Court: I am going to rule now upon the Development Company case.

Mr. Aurich: I beg your pardon?

The Court: I am prepared to rule on that. I will grant the motion as to the Development Company.

Mr. Hackley: May I be heard on it, your Honor?

The Court: Proceed.

Mr. Hackley: The point that we have made on the Shell Development Company phase is this: that, as the testimony will show when we have an opportunity to produce it, the testimony of Dr.——

The Court: If you are going to qualify it, why, I will let him submit his motion, and you may proceed. If you are qualifying it, I don't know what testimony is coming.

Mr. Hackley: That's it; I have the testimony of Dr. Kenneth A. Wright, which was taken and clearly involves the Shell Development Company.

The Court: Let him submit his motion and go forward with the case.

Mr. Hackley: I understand that the ruling is reserved, your Honor?

The Court: Yes. [267]

(During defendants' opening statement, the following statements were made on behalf of defendants):

Mr. Aurich: There is another provision of the contract which follows that one that I should like to call your Honor's attention to, and it needs a little explanation. When the matter was first taken to the Shell Company by Mr. Ruddle, as a matter of routine it was submitted to the patent department—that is the Shell Development Company, which is for our purposes the patent department of Shell Company, although they might not like that,—and a cursory investigation was made to see whether Shell could supply asphalt to foundries for use as a core oil without infringing anybody's patent. And they came across a patent to a man by

the name of Thomas, concerning which I interrogated the witness yesterday. This patent, for practical purposes, broadly covers a core oil composed of sand, water and asphalt emulsion, I believe. Shell felt that that patent, if valid, would be sufficient to prevent their selling asphalt to be used in combination with Mr. Ruddle's solution, because, although there were differences between the two, to be sure, the Thomas patent would be the broad patent and the sale of Core-Min-Oil would be an infringement of it. So the contract provided that Shell was to endeavor to purchase this Thomas patent for [278] \$5,000 or less. It further provided that Shell should assign to Peck and Ruddle a one-half interest in this Thomas patent upon Peck and Ruddle reimbursing Shell for one-half of the purchase price. The method of reimbursement provided for in the contract was that as royalties accumulated, Shell was to take out of the pot half of the money they spent for the patent. And pursuant to the provisions of the contract, Shell did purchase the Thomas patent and paid \$1,000 for it.

Now, Shell has never sold any Core-Min-Oil or other product for foundry use; no royalties have accrued to Shell. Therefore no royalties have accrued to Peck and Ruddle, and therefore Shell has not been reimbursed for this \$500. So it still owns the Thomas patent. However, it isn't in the core oil business. It had its lesson, and the Thomas patent is of no value to it whatsoever. So we are willing to do either one of two things, at the election of the plaintiffs: We are willing to give them the entire title to the Thomas patent upon the payment of \$1,000 that we paid for it, or we will give them a half interest for the \$500, if they want it. We don't want it. [279]

JOHN F. McSWAIN,

Called for the Defendants; sworn.

Direct Examination

Mr. Aurich: Q. Will you state your full name, Mr. McSwain, for the Court and the reporter?

A. John F. McSwain.

Mr. Hackley: I understand that at the conclusion of the day's session I can interrupt Mr. McSwain's examination on behalf of the defendants and proceed to close the plaintiffs' case, and I will resume again?

The Court: Yes.

Mr. Aurich: Q. What is your age, Mr. McSwain?

A. Fifty-five.

Q. And your occupation, please?

A. Manager of the asphalt department for the Shell Oil Company.

Q. That is the Shell Oil Company, one of the defendants in this case? A. Yes, sir.

Q. Where do you reside?

A. At 2525 Rose Walk, Berkeley.

Q. For how long a period of time have you been manager of the asphalt sales department of the Shell Oil Company?

A. Oh, for a little over ten years.

Q. How large a department in the organization of the Shell Oil Company is the asphalt sales department?

A. Well, it is one of the less important departments.

(Testimony of John F. McSwain.)

Q. Prior to January 1, 1938, —

Mr. Hackley: I object to that, your Honor, as a conclusion. The question is how large is it, not what this witness thinks of the size.

The Court: If there is any further inquiry you want to make, [281] you develop the facts yourself.

Mr. Aurich: Q. Prior to January 1, 1938, what products of the Defendant Shell Oil Company were being sold by your department?

A. Well, the road-building and asphalts—road oils, emulsions for road-building, and asphalts for roofing purposes.

Q. Are you familiar generally with the products that have been sold by the Shell Oil Company during your employment with it? A. Yes.

Q. As manager of the asphalt division of the Shell Oil Company, and from an inspection of the records of your department, are you familiar with the nature of the products that had been sold by your department prior to your entering the employ of the company? A. Yes, sir.

Q. Will you state whether or not at any time prior to January of 1938 the Shell Oil Company had ever manufactured or sold any core oil or other similar product for foundry purposes?

A. They had not.

Q. From January, 1938, up to the present time, has the Defendant Shell Oil Company ever manufactured and sold any core oil for foundry purposes? A. It has not.

(Testimony of John F. McSwain.)

Q. Has the Shell Oil Company manufactured and sold any core oil for any purposes?

A. It has not.

Q. Do you know whether or not the Shell Oil Company has completely abandoned all efforts to manufacture and sell or exploit any kind or type of core oils or products for related factory uses?

A. It has.

Q. Do you know a man by the name of Allan B. Ruddle? A. I do.

Q. For how long a period of time have you been acquainted with him?

A. Oh, I would say about 40 years.

Q. Do you recall a meeting with Mr. Ruddle sometime in the latter [282] part of 1937 or the first part of 1938? A. I do.

Q. Have you any way, at this time, of fixing the exact time of your meeting with Mr. Ruddle?

A. No, I haven't; my recollection is that it was in the latter part of '37 or early in '38; just when, I don't know.

Q. Where was this meeting that you had with Mr. Ruddle that you have described?

A. Well, the meeting—I believe that I met him on the street. That recollection is somewhat vague, but he came to my office a few days later.

Q. Do you have any recollection as to anything that was said by Mr. Ruddle to you at that meeting on the street? A. No, I haven't.

Q. Approximately how long prior to that meet-

(Testimony of John F. McSwain.)

ing with Mr. Ruddle on Market Street had it been since you last saw Mr. Ruddle?

A. Well, it was several years; I don't know just how long.

Q. Well, prior to your meeting with Mr. Ruddle on Market Street did you used to meet with him frequently or infrequently?

A. Very infrequently.

Q. Can you tell me how infrequently or frequently you had seen Mr. Ruddle prior to your meeting with him on Market Street; say for a 10-year period prior thereto?

A. Well, my recollection is that possibly once in the 10 years previously.

Q. Who was present on the occasion when Mr. Ruddle came to your office in the latter part of 1937 or the first part of 1938?

A. So far as I recall, he and I were the only ones present.

Q. Can you at this time recall the substance of the conversation that was had between you and Mr. Ruddle at that time and that place? A. I can.

Q. Will you give it to us to the best of your recollection, please?

A. Mr. Ruddle came to my office and stated that—generally, that [283] he had a core oil—I didn't know what a core oil was—and he described this core oil, saying that it used an asphalt emulsion and another solution which was a secret solution. And I am not sure at that time whether he referred to a sodium silicate or not. That is something I can't

(Testimony of John F. McSwain.)

recall, although he did refer to the fact that there was a secret solution which was the secret of the success of this material. I told him that I presumed that he wanted us to sell it, or wanted somebody to take this thing up, and I told him that I thought a thing of that sort should not be offered to our company; it should be taken to some company supplying foundries, or a company familiar with foundry work. He said—he didn't disagree with that, but said he simply wanted me to go over to Macauley's Foundry in Oakland and see what he had done. He pointed out that this emulsion used, or this core oil used large quantities of asphalt emulsion. And in view of the fact that it is part of my job to develop new markets for asphalt emulsion, I agreed to go over to Vulcan's with him.

Q. Did you say Vulcan Foundry?

A. I said "Vulcan"; I should have said Macauley's Foundry.

Q. Do you recall whether or not anything was said by Mr. Ruddle to you at that first meeting concerning the advantages or disadvantages of his product as compared to other products?

A. Yes.

Q. What other products did he mention to you, if any?

A. He mentioned linseed oil as the binder that was ordinarily used for core oil, or as a core oil.

Q. Will you state whether or not at this conversation that you had with Mr. Ruddle he explained to you what a core oil was? A. He did.

(Testimony of John F. McSwain.)

Q. What they did with it, and so forth?

A. He did.

Q. Can you tell us now what, if anything, he said concerning the [284] advantages that he claimed for his core oil over linseed oil?

A. The advantage that he stressed at that time was the shorter baking time and the consequent lessened consumption of fuel resulting from the shorter baking time. I think he gave me relative figures as to the baking time required for his core oil and the time required for linseed oil—that is, approximately relative figures. Another advantage that he claimed was the freedom from gassing, which he explained as being a tendency on the part of certain core oils to create gas pockets in castings. He also said that the cores did not burn in. “Burn in,” I believe, is the tendency of the core to disintegrate to some extent and allow the molten metal to enter the core and give a rough interior. But the chief advantage that he claimed at that time—the one that he laid particular stress on, as I recall, was the economy resulting from the lessened fuel consumption.

Q. Can you recall any other advantages that Mr. Ruddle claimed for his Core-Min-Oil as compared with linseed oil at this first visit?

A. Well, there were various advantages claimed, but I can't be positive that they were at the first visit or not.

Q. Do you recall whether or not Mr. Ruddle

(Testimony of John F. McSwain.)

mentioned to you anything about the difficulties, if any, that he had been having with his core oil?

A. Yes. He said that he had been working at the Macauley Foundry, and that he had found that some of his cores [285] were excellent and some very bad, and he couldn't figure out why the bad ones were bad and the ones that he said were good were good; that if he could find out what caused that, if he could overcome that difficulty, then he had something that was extremely valuable.

Q. Did he make mention at this first conversation with you of any other difficulties that he stated he had encountered?

A. I don't recall that he had encountered any other difficulties.

Q. Did you subsequently go to the Macauley Foundry to observe the results of what Mr. Ruddle told you was his work?

A. I did.

Q. Who went with you?

A. Mr. Raymond Harsch and Arthur C. Waller.

Q. For the purpose of the record will you identify each of those gentlemen for me, please?

A. Mr. Harsch functions as assistant manager of the department and is a technical assistant, has to do with technical matters, road-building,—of course, that is our primary business. Mr. Waller was also a technical man assigned to field work.

Q. Is Mr. Waller a resident of Seattle?

A. At the present time, yes.

Q. And he is now in San Francisco?

(Testimony of John F. McSwain.)

A. Yes.

Q. He is remaining here at my request for the purpose of attending at this trial?

A. Well, I think so; he is remaining here, anyway.

Q. What was your purpose in going to the Macauley Foundry to observe these cores with Mr. Ruddle?

A. Well, our business is that of selling asphalt for road-building—asphalt emulsions for road-building, as well as some other purposes, and in view of the fact that Ruddle said that this core oil used large quantities of [286] emulsion, I thought that it was very proper for me to investigate and to see whether or not there was a market in this type of core oil for emulsions.

Q. Now, you did go to Macauley's, I believe you said? A. Yes.

Q. Prior to that visit to Macauley's had you ever been in a foundry in your life? A. I had not.

Q. Prior to that visit to Macauley's were you familiar at all with foundry operations?

A. Not to any degree.

Q. Prior to that visit to the Macauley Foundry had you any knowledge whatsoever as to the purpose for which a core oil was used in a foundry, outside of what Mr. Ruddle may have told you?

A. Until he came into my office I did not know there was such a thing as a core oil.

Q. Do I understand that Mr. Ruddle went with you on that visit to the Macauley Foundry?

(Testimony of John F. McSwain.)

A. Yes, he did.

Q. How long a period of time elapsed, as nearly as you can recall, between the date of his visit to you at your office, that you have described, and the time that you went to the Macauley Foundry?

A. Well, it was a few days; it may have been a week; shortly afterwards. I can't say exactly how long.

Q. Will you tell us in your own words, in as much detail as you can, what occurred after you arrived at the Macauley Foundry? That is, I would like to have you tell the Court where you went in the foundry, what you observed, what was said by anybody that you can now recall, and if you can't recall the exact details of the conversation, will you please give us the substance of what was said, to the best of your recollection?

A. Well, Ruddle led us into the foundry and over to the northwest corner of the building where the core room was located. There was some conversation with the core maker who was working, as I recall, on the [287] head of some kind of a motor. We looked at the oven in which the cores were baked, and looked at some cores that were stacked, or piled, or laid along on a two by four, one of the braces at the back of the building. I believe there were also some cores, or pieces of cores, that were back of the foundry. Ruddle pointed out some of the cores that he said were good cores, and some that he said weren't good cores,—again referring to the

(Testimony of John F. McSwain.)

fact that that was his difficulty; if that could be overcome, then this was an extremely valuable thing. He led us over to the opposite diagonal corner of the building and showed us a casting of a deep well pump head. I believe when he first came to the office he referred to this pump head. At any rate, he showed us this pump head, and we felt the interior of the casting, at his request, to see how smooth it was. We were introduced to the foreman of the foundry. As I recall it, we had, then, a very brief conversation if any at all, with him.

The Court: Q. Do you recall his name?

A. I can't recall his name. Vaguely, it seems to me that it was Cox, your Honor, but I can't remember.

Mr. Aurich: Q. Would you remember his name if I should mention it to you?

A. I might; I can't be sure.

Q. Was it Otto Gosch? A. What is that?

Q. Was it Otto Gosch?

A. No; that was—I believe Otto Gosch was the core maker. He was—I remember his appearance; he was a big, burly man. But the superintendent or the foreman——

Q. Olsen? A. What is that?

Q. Olsen?

A. Olsen was the man. Olsen was the foreman. He was a man, I would say, around 60, a very thin man; and as I recall it we had a very brief conversation with him. It may not have been any con-

(Testimony of John F. McSwain.)

versation. We were introduced to him. There was [288] some conversation with the core maker. As I recall it, I had a very brief conversation, or possibly no conversation, with the core maker, although Waller talked to him a little longer about the core that he was working on. After that, as I recall it, we got in the car and came back to San Francisco.

Q. At this first visit that you made to the Macauley Foundry that you have described, did you observe anyone making any cores with what was then described to you as Core-Min-Oil?

A. No.

Q. By the way, Mr. McSwain, at this first visit to the Macauley Foundry were you familiar with the phrase "Core-Min-Oil"?

A. I don't think so. I think—no, that came—that developed later; I can't say just how much later, but sometime later. At that time we didn't talk about it—as I recall, we didn't talk about it as Core-Min-Oil, although—well, I wouldn't be sure; maybe we did and maybe we didn't.

Q. What did Mr. Ruddell call his product, just a core oil?

A. It was discussed as a core oil.

Q. Following that visit to the Macauley Foundry that you have just described, did you ever pay any other visits to the Foundry? A. No.

Q. You never returned to that foundry at any time?

(Testimony of John F. McSwain.)

A. I don't recall that I ever did.

Q. Do you know whether Mr. Waller ever made any other visits to the Macauley Foundry?

A. I believe that he did.

Q. He was subsequently assigned to work——

A. He was subsequently assigned to work with Ruddle.

Q. Following your visit to the Macauley Foundry, which you have just described, what next occurred with respect to this core oil, or what followed after your observations that you made at that time?

A. Well, we discussed the matter in the office, and came [289] to the conclusion that it would be a wise thing for us to cooperate with Ruddle to whatever extent we could in finding out what the source of this single difficulty was, so that if this was a successful core oil we would be in the favored position in selling the emulsion to whoever used the core oil.

Q. What was the first thing, if you did do something, that you did in connection with attempting to solve this one difficulty that Mr. Ruddle had discussed with you?

A. The first thing?

Q. The first thing that you recall.

A. Well, I assigned Waller to work with Ruddle; that is, Waller's province was that of observer.

Q. Well, I perhaps am confusing you, Mr. McSwain. Following this discussion that you mentioned a moment ago, did you have any sand tests made of sand at the Macauley Foundry?

(Testimony of John F. McSwain.)

A. Yes, I believe—in fact, I know that Ruddie supplied us at our request with a sample of core sand and a sample of the emulsion which he had been using. The emulsion he had been using, as I recall, had been supplied, or he had secured from the Union Oil Company. And we had tests run on that sample to see whether we were in a position to manufacture an emulsion with comparable qualities. We also asked him for a sample of the sand. We had a theory that the cause of this single difficulty which he said he had with his core oil was very likely due to improper percentages of binder, or an improper relationship between the binder and sand.

Q. What do you mean by “binder”?

A. Of his core oil.

Q. What do you mean, “his core oil”?

A. Core oil. Our experience is with road-building, and in the construction of a road, particularly with fine aggregate mixes, the amount of binder that is added to the fine aggregate is very frequently a cause of difficulty; that is, if there is insufficient binder the road [290] ravel; if there is too much binder the road pushes and becomes wavy. So to us the percentage of binder was a critical thing, and so we asked him for a sample of core sand in order that we could make a sieve analysis of the sand and determination of the surface areas, and applying a formula that we would apply for a road construction sand, arrive at what might be the proper percentage of core oil for that sand.

(Testimony of John F. McSwain.)

Q. And the Shell Company did make that test of the sand? A. We did.

Q. What was the result, by the way, of the comparative test of the Union Oil emulsion with the asphalt emulsion manufactured by Shell?

A. Well, we found that we manufactured an emulsion that was quite comparable—practically identical, I will say.

Q. For the purpose of the record, and for future reference, can you tell how that asphalt emulsion manufactured by Shell was designated?

A. The code number that we applied to that emulsion was Y-104.

Q. Did you advise Mr. Ruddle of the results of this sand analysis you had made? A. We did.

Q. Did you advise Mr. Ruddle of the results of the comparative tests between the Union Oil emulsion and the Shell's Y-104?

A. I believe we did.

Q. Do you recall at this time whether or not you made any recommendation to him as a result of your findings in that regard? A. I believe we did.

Q. Do you recall whether those recommendations were in writing, or were they oral?

A. We wrote him a letter.

Mr. Aurich: It is stipulated between the parties, if the Court please, that the copy of a letter which I have in my hand, dated January 14, 1938, addressed to Mr. Ruddle and signed "Shell [291] Oil Company," is a true and correct copy of a letter

(Testimony of John F. McSwain.)

which was written on or about the date it bears, and that the original was received by the plaintiff, Mr. Ruddle.

Mr. Hackley: That is correct.

Mr. Aurich: I will ask that the letter thus identified be offered and received in evidence as Defendants' Exhibit BB.

(The copy of the letter referred to was marked "Defendants' Exhibit BB" in evidence.)

Mr. Aurich: Q. I show you a letter which has just been offered and received in evidence as Defendant's Exhibit BB. I will ask you to state if that is the letter which you wrote to Mr. Ruddle advising him of the results of your tests on the sand and your tests on the emulsion, and the results of your conclusions as to the ratio of emulsion and sand that he should use in his cores? A. It is.

Mr. Aurich: For the Court's information I might state that the letter just sets forth in tabular form the results of the sieve test on the sand; it reports the result of the test of the two emulsions as being substantially identical; and the two concluding sentences I would like to read, if I will not take too much time. The concluding two sentences are these:

"It is felt that as long as the emulsion will satisfactorily mix with your solution without coagulation or separation, the final consistency of the core is definitely a function of the percentage of solution-emulsion mixture to the

(Testimony of John F. McSwain.)

sand. We shall be glad to assist you further as you may require."

Signed by the Shell Oil Company.

Q. I believe that you have mentioned that at some time following your visit to the Macauley Foundry you assigned Mr. Waller to the [292] task of working with Mr. Ruddle? A. Yes. [293]

Q. What was your purpose in assigning Mr. Waller to work with Mr. Ruddle?

A. Well, Ruddle had stated that he couldn't understand what caused the differences in the cores; that apparently they would be handled in exactly the same way, but some cores would be what he said were good and some would be what he said were bad, but that as far as he could tell he did things in exactly the same way. And Waller has a characteristic which we considered very valuable: He has a very keen observation. And for that reason we assigned him to this task, in the hope that he might observe something in Ruddle's technique that Ruddle wasn't aware of.

Q. Do you know what Mr. Waller's experience in the foundry art had been prior to the date he was given this assignment?

A. As far as I know, it was about equal to mine.

Q. And that was——? A. Nil.

Q. Can you give us the approximate time when Mr. Waller was assigned to work with Mr. Ruddle in this matter?

(Testimony of John F. McSwain.)

A. Well, I think it was a couple of weeks after our visit to the Macauley Foundry.

Mr. Aurich: Mr. Hackley has stipulated that this letter that I have in my hand may be admitted without objection. I would like to merely identify it. It is a copy of a letter dated January 25, 1938, from Head Office Sales, I believe, to Manufacturing at Martinez (showing document to witness)——

The Witness: Yes.

Mr. Aurich: An inter-office communication, so to speak, of the Shell Oil Company, and while it states that the original was signed by R. T. Collier, this witness' initials appear in the lower left-hand corner. And while I don't want to be in the position of testifying, I understand from this witness that at the [293] date this letter was sent, certain persons only in the Shell organization signed certain letters, and on the pink or carbon copy, in the lower left-hand corner, appeared the initials of the person who wrote them.

Q. Is that correct, Mr. McSwain?

A. That is correct.

Q. And these initials which appear in the lower left-hand corner are your initials?

A. That is correct.

Mr. Hackley: The witness actually wrote the original of that letter; is that correct?

Mr. Aurich: That is correct.

I ask that the letter which I have thus identified be offered and received in evidence as Defendants' Exhibit CC.

(Testimony of John F. McSwain.)

(The letter referred to was marked Defendants' Exhibit CC in evidence.)

Mr. Aurich: Q. By means of this letter, Defendants' Exhibit CC, can you give us any more definite information as to when Mr. Waller was given the task to which you have referred a moment ago, namely, of acting as observer of Mr. Ruddle's work?

A. Well, as I recall it——

Q. I will show you the letter, Mr. McSwain.

A. I would say that this—I am not sure of the question.

Q. The question simply is this: Mr. McSwain, can you, from that letter, give us any more definite date when Mr. Waller was assigned to act as observer of Mr. Ruddle's work?

A. I would say it was shortly after January 25, the date of this letter.

Q. 1938? A. 1938.

Q. Do you know whether or not the conclusion that had been arrived at between you and Mr. Waller and Mr. Harsch that this problem that Mr. Ruddle was encountering was one that could be solved by [294] varying the mixtures of solution and emulsion to sand, was correct?

A. Well, it developed that it was not correct.

Q. Following that what, if anything, was done by the Shell Oil Company to endeavor to find out the real cause of the difficulty?

A. Well, in the work—let me put it this way: Waller was assigned to work with Ruddle, and as I

(Testimony of John F. McSwain.)

recall it they did some work at the Vulcan Foundry; that is, Ruddle fixing the cores, and then the cores were taken to Martinez where we had a man by the name of Spotswood working in the laboratory, and he had been assigned and worked on this problem also, and the cores were baked in an oven at the Martinez laboratory.

Q. Well, what was the purpose of having Mr. Spotswood assigned to do this work? What was he supposed to do?

A. Well, he was supposed to find out, if he could, what the cause of this difficulty was.

Q. Can you identify Mr. Spotswood for us, please?

A. Mr. Spotswood is a mechanical engineer employed at the Martinez Refinery on what is known as technical applications.

Q. That is what we find in some of the reports that have been offered in evidence identified by the initials TAC?

A. TAC stands for technical applications committee.

Q. Does the letter, Defendants' Exhibit CC, assist you in any way in fixing the time at which Mr. Spotswood was assigned to the task of finding this one difficulty that Mr. Ruddle had mentioned to you?

A. If I take long reading this—I have had some difficulty with my eyes, that it takes me a little while to find things.

Mr. Aurich: I might say to the Court, the witness has been ill.

(Testimony of John F. McSwain.)

The Court: There is no question about this letter, is there?

Mr. Aurich: No. I am merely asking him to fix the date. [295]

Q. The letter is dated January 25, 1938, Mr. McSwain? A. That is right.

Q. Was it about that time that Mr. Spotswood was assigned——

A. Mr. Spotswood was assigned to that work.

Mr. Hackley: You can read the portion of the letter you have in mind; I have no objection.

Mr. Aurich: I am sure I couldn't even tell you what portion it is. The witness would have to——

Mr. Hackley: It is about the second or third paragraph.

Mr. Aurich: That is right; thank you.

Q. Do you know anything of your own knowledge about the work that was carried on at the asphalt laboratory at Martinez by Mr. Spotswood?

A. Well, I know those things that have been reported to me.

Q. You were never there when any of the tests were made, were you?

A. I don't recall that I ever was.

Q. Do you recall whether or not Mr. Spotswood, or anyone at the asphalt laboratory at Martinez, was ever successful in finding out the cause of one difficulty mentioned by Mr. Ruddie? A. Yes.

Q. How was that information conveyed to you?

A. Well, as I recall, it was conveyed to me by

(Testimony of John F. McSwain.)

word of mouth; I don't remember whether it was Spotswood told me, or some of the men in the office.

Q. By the way, Mr. McSwain, are you familiar with technical application committee reports?

A. I have put my initials on a lot of them.

Q. Do they come to you in the regular and ordinary course of events?

A. Those of them referring to matters handled by my department do.

Q. Do you recall whether or not there was a technical application committee report with respect to this alleged difficulty mentioned by Mr. Ruddle?

A. I don't recall the report, but I am very [296] sure that there was.

Q. You paid no attention to it, in general at least, or in detail?

A. No.

Q. Following the visit that you made to the Macauley Foundry on the occasion that you were there with Mr. Ruddle, Mr. Waller, and Mr. Harsch, will you state whether or not the Shell Company immediately decided that it would conduct experiments at the Vulcan Foundry in an endeavor to assist Mr. Ruddle in finding out the cause of the one difficulty which he had referred to?

A. Well, I don't recall that we did decide immediately. There was probably some period in there when we discussed the matter.

Q. Taking the period of time roughly now, from your visit to the Macauley Foundry, which for the purposes of identification we shall fix as the latter part of December, 1937, and taking as your other

(Testimony of John F. McSwain.)

limit of time that Mr. Spotswood discovered what was causing the softening of the cores, did you have any conversations with Mr. Ruddle? A. Yes.

Q. That would be roughly between the period, let us say, of December, 1937, and the latter part of February, 1938; is that right? A. Yes.

Q. Can you at this time recall any specific conversation that you had with Mr. Ruddle during that period of time?

A. We had a number of—a good many conversations, I would say. The only one that I recall specifically was his bringing over a letter—Peck may have been with him—from some Foundry Magazine, setting forth the quantities of core oil which they thought were used in the United States in the course of a year.

Q. Can you tell us with respect to this interval of time when this conversation occurred?

A. Oh, I couldn't say. It was sometime after Ruddle's first visit, but I don't recall just how [297] soon.

Q. It was prior to the discovery of the cause of the softening of the cores? A. Yes.

Q. You believe Mr. Lydell Peck was there?

A. Well, it seems to me that he was, but I couldn't be positive.

Q. Where was this conversation?

A. In my office.

Q. Will you tell us as nearly as you can now recollect what was said by the various parties to

(Testimony of John F. McSwain.)

that conversation? And before you answer, you might include in there statements made by anyone other than the individuals you have named, if anyone else was present.

A. The only—you are referring to the visit when I was shown this letter?

Q. That is right.

A. Well, so far as I recall, they and I were the only ones that were present. It is possible that some of the boys might have stepped in, although I have no recollection of it.

Q. At least, if anybody else stepped in, they took no active part in the conversation?

A. I think not, no.

Q. Will you please go on and tell us as nearly as you can recall what was said by the various parties that were there?

A. Well, it was pointed out by Ruddle that these people had estimated that there were some 23,000,000, or 23,500,000 gallons of core oil—linseed oil—used in the United States in the course of a year—that is, used for foundry purposes; and making a calculation based upon the ratio that they thought would have to be used—the ratio of their oil that would have to be used to give the same result as linseed oil, they thought that there was, I think, something like 75,000,000 gallons; maybe it was 100,000,000 gallons; that would have to be used in the course of a year, of Core-Min-Oil.

Q. What percentage of that 75,000,000 or 100,-

(Testimony of John F. McSwain.)

000,000 gallons per [298] year would be asphalt emulsion? Was that discussed, do you know?

A. Yes. It seems to me it was about a third; it was either a third or a fourth—a third, I believe.

Q. Do you recall anything else that occurred, or that was said at this conversation, or is that the best that you can recollect at the present time?

A. As I recall, that was the gist of the conversation. There was probably more said I can't recall.

Q. Prior to this conversation, Mr. McSwain, had you or anyone connected with the Shell Oil Company, in so far as your knowledge is concerned, made any survey to determine the core oil market in the United States? A. We had not.

Q. Prior to this conversation with Mr. Ruddle, and possibly Mr. Peck, had you any idea or knowledge at all of what the total gallonage of core oils was that was sold for core oil purposes?

A. Not the slightest.

Q. At the time of this visit, when Mr. Ruddle and Mr. Peck were telling you about this 23,500,000 gallons, did you have any knowledge as to how much linseed oil was sold for core oil purposes in the United States? A. None whatever.

Q. Do you recall any conversation with Mr. Ruddle at any time wherein he disclosed to you any of the ingredients of his Core-Min-Oil, confining your testimony now to the period of time prior to the date of the contract?

A. Any of the ingredients, did you say? [299]

Q. That is right.

(Testimony of John F. McSwain.)

A. Yes, he told me at the time of his first visit that it contained asphalt emulsion and his secret solution, and I believe sodium silicate. I can't be positive whether he told me at that first meeting, or whether it was one of the meetings shortly after that.

Q. But in any event, at some time prior to the date the contract was signed, Mr. Ruddle had told you that he used an asphalt emulsion and a secret solution, and also told you that one of the ingredients of the secret solution was sodium silicate?

A. Yes.

Q. Do you recall approximately the time when active negotiations for the contract here in question were commenced?

A. It was sometime subsequent to Spotswood's determination of the effect of CO₂ gas on core oil.

Q. That would be sometime subsequent to let us say February 24, 1938, as shown on TAC report 79, Plaintiffs' Exhibit No. 3, in which Mr. Spotswood reports the results of his work in an endeavor to find out what was causing Mr. Ruddle's difficulty with his cores?

A. Yes.

Q. Can you give me any estimate of how long a period of time after February 24, 1938 it was before the active negotiations for the contract were commenced; just roughly, please?

A. Oh, it might have been a week; it might have been ten days.

Q. Now, between this whole interval of time,—

(Testimony of John F. McSwain.)

let us say roughly from January 1, 1938 or late in December 1937,—to the time when active negotiations for the contract were commenced, did you have many or few discussions with Mr. Ruddle and Mr. Peck, or Mr. Ruddle or Mr. Peck?

A. We had a good many discussions.

Q. With whom were the majority of the discussions had, Mr. [300] Ruddle or Mr. Peck?

A. Mr. Ruddle.

Q. Does any one particular conference or conversation or visit stand out in your mind so that you can tell us about it, outside of this one that you have referred to when they told you the number of gallons of linseed oil that was sold on the market?

A. That, and the first interview, are the only ones that I recall.

Q. Can you recall in that interval of time, without regard to any specific interview, what was said generally by you and what was said by Mr. Ruddle and by Mr. Peck? And please fix these times as nearly as you can and the places, as nearly as you can.

A. I missed the first part of the question.

(Question read.)

Mr. Hackley: This is up to the start of the contract negotiations?

Mr. Aurich: That is right; up until the active negotiations for the contract were commenced.

Mr. Hackley: Which I would estimate from the way he has testified would be about March 1.

(Testimony of John F. McSwain.)

Mr. Aurich: It would be around there somewhere.

The Witness: Around there. You want me to tell you what happened at any other interviews than these first two we have talked about?

Mr. Aurich: Q. No. I want you to tell me, without regard to any particular interviews other than those two, what happened, without fixing the particular interviews, unless you can.

A. Generally, what was being said by Mr. Ruddle—oh, well, at all of these interviews Ruddle talked about the superior qualities of his core oil; pointed out the various advantages; gave me a sheet of paper in which various [301] advantages were listed. And in fact every interview that we had was one in which he repeatedly referred to the advantages that his core oil would have as compared with linseed oil.

Q. At any time during these conversations did he mention to you any difficulties that he had encountered with his core oil other than the one that we have already referred to?

A. No, as I recall it, that was the difficulty.

Q. In one of your previous answers you mentioned a sheet which you said Mr. Ruddle gave you. Will you tell us a little bit about that, please?

A. Well, it was—in what way? What do you mean about it?

Q. Well, can you describe it?

A. As I recall it, it was a piece of—a legal size sheet or letter size sheet, typewritten, or which vari-

(Testimony of John F. McSwain.)

ous advantages resulting—were set forth for his core oil.

Q. I now show you a document which has been marked Defendants' Exhibit T for identification, and ask you if you can identify that document, and if so, will you state what it is?

A. This looks very much like the document—I think it is on different paper, as I recall it. Well, I don't know whether it was on a perforated sheet or not.

Q. Well, do you know where you got the document Defendants' Exhibit T?

A. It was given to me by Mr. Ruddie.

Q. Is that the sheet that you referred to in which it set forth the alleged advantages of Core-Min-Oil that you referred to? A. Yes, sir.

Mr. Aurich: If the Court please, the Clerk advises me that Defendants' Exhibit T is already in evidence, but I believe that was withdrawn when I withdrew the deposition of Mr. Ruddie this morning, because I had offered that in connection with it. [302] At this time I would like to offer this document in evidence as Defendants' Exhibit T.

The Court: Let it be marked.

Mr. Aurich: I will endeavor to fix the time when it was handed to the witness a little more closely.

Mr. Hackley: On that point, I think you withdrew Exhibits T and U at the same time.

Mr. Aurich: R and T.

Mr. Hackley: Whatever it was; the two of them annexed to the deposition.

(Testimony of John F. McSwain.)

Mr. Aurich: Q. Can you fix any more definitely than you have, Mr. McSwain, the time when this document Defendants' Exhibit T was handed to you?

A. No, I can't. It was handed to me, as I recall it, shortly after Ruddell's first visit, but the exact date I can't be sure of.

Q. Is Defendants' Exhibit T a copy of the document he handed to you, or did he hand you that particular sheet of paper Defendants' Exhibit T as it now stands?

A. Well, I believe that is a copy, although I wouldn't be very positive about it.

Q. Your recollection isn't sufficient——

A. My recollection is it was a sheet foolscap size, something of that sort.

Mr. Aurich: For your Honor's information, I will state briefly that this document lists roughly eight claimed advantages for Core-Min-Oil, and I may be able to enumerate them very, very briefly.

Mr. Hackley: Do you offer that document?

Mr. Aurich: Yes, I have offered it.

Mr. Hackley: In the light of the testimony of the witness who is unable to identify it, I object to it as having no proper [303] foundation laid and not properly identified.

Mr. Aurich: I will try to lay a further foundation, if your Honor feels it is necessary.

Q. I call your attention to the first paragraph of that document, and ask you to state where you got that information that is contained in it.

(Testimony of John F. McSwain.)

A. What do you mean where I got the information?

Q. What information is there set forth—did you get that information from anybody?

A. Yes.

Q. From whom? A. From Ruddle.

Q. How about paragraph 2?

Mr. Hackley: I object, your Honor, to him testifying from a document until it is properly identified.

Mr. Aurich: I can't identify it until I show it to him.

Mr. Hackley: If the witness can recognize it, that is one thing. So far he has said he can't recognize it. He thinks it was a different kind of paper; he doesn't know whether the contents are the same.

Mr. Aurich: I will put the question directly to the witness:

Q. Can you identify that document which you have in your hand, which has been marked Defendants' Exhibit T? If you can, will you tell us what it is, please? If you can't, say so.

A. I can't identify this sheet of paper; I can identify, I think, the contents.

Mr. Aurich: I will withdraw the offer.

Q. Do you recall whether or not at any time Mr. Ruddle made any representations to you about the suitability for general foundry use of his Core-Min-Oil in making cores? A. He did.

Q. Will you tell me what he said in that regard? Fix the time and place of the conversation, please, as best you can. [304]

(Testimony of John F. McSwain.)

A. I would say that these conversations were in my office and during the early—shortly after his first visit, during the frequent visits that were made to my office between his first visit and the time that we entered into a contract. He stated that the use of his core oil would result in a very large reduction in the consumption of fuel; due to the fact that his core oil would not permit burning in there would be a very large saving in castings; that due to the—when his core oil was used a very porous core was secured, which prevented gassing and the formation of gas bubbles in the casting; that you got a much stronger core using his core oil. Well, there were quite a number more claims that he made; I can't recall them at this moment.

Q. Will you state whether or not at any time in your conversations with Mr. Ruddle he indicated to you his apprehension that a large corporation might obtain knowledge of his so-called secret solution and thus deprive him of any benefits that he might otherwise receive from it? A. He did.

Q. Will you tell us what he said in that regard?

A. Well, I can't quote his exact words, but he very frequently voiced his fear that he would be done out of his idea.

Q. And what was your reply to Mr. Ruddle's remarks in that connection?

A. Well, at that time I am not sure that I made any reply. You are referring to the period up to the time of the negotiations for the contract?

(Testimony of John F. McSwain.)

Q. Let me get at it this way, Mr. McSwain: When was the first time that Mr. Ruddle indicated to you his apprehension that you have mentioned?

A. Well, I would say that it would probably be—I would say that it was the first visit, and very frequently at subsequent visits. [305]

Q. What did you reply to his statements of that character?

A. Well, my general reply was to the effect that—and this was repeated many times—that as far as we were concerned, our company was honest, and in our dealings with him, if we had any, we would be honest. Those——

Q. Go ahead. A. That is all right.

Q. Do you recall in any of your conversations with Mr. Ruddle prior to the active negotiations for the contract that anything was said about any patent applications on Mr. Ruddle's core oils that he might then have had pending?

A. I believe that he said he had patent applications pending; in fact, I know he did.

Q. Now, prior to the time of the discovery by Mr. Spotswood of the difficulty caused by the presence of CO₂ gas, had you had any discussions with Mr. Ruddle or Mr. Peck relative to entering into a contract with them regarding the manufacture or sale of Core-Min-Oil?

A. I don't recall any discussions prior to that time.

Q. Did the Shell Company ever entertain the idea of marketing and selling Mr. Ruddle's core oil?

(Testimony of John F. McSwain.)

A. Did we?

Q. Yes. A. Ever?

A. It did.

Mr. Aurich: Q. Who in the Shell Company was responsible for that, or who first entertained that notion?

A. I believe that I did.

Q. Now, can you tell us briefly the occasion of your entertaining that notion or undertaking the thought of the Shell Company's engaging in the marketing and sale of a core oil after the [306] discovery by Mr. Spotswood?

A. Well, subsequent to the Spotswood discovery of what Ruddle said was his only difficulty, it occurred to me that we, as a result of our efforts, had given this thing a value; as it was, we were going to be competing in the open market with whoever else might make the emulsion, and that the wise thing for us to do, in view of the fact that we had found the thing that caused all the difficulty, would be to enter into a contract with these people so that we would be in a better position to supply the emulsion that would be required.

Q. Do you recall at any time whether or not Mr. Ruddle ever mentioned to you any concerns that were interested in his core oil? A. Yes.

Q. When were those conversations and what was said?

A. Well, he told me that he had had dealings with the American Bitumuls Company. Apparently

(Testimony of John F. McSwain.)

those dealings were at a standstill, because he said they wanted too much, or wanted everything, or something of that sort. He also—he or Peck referred to the American Brake Shoe & Foundry Company as being quite anxious to get the use of this material. Peck particularly made frequent references to Mr. Collier, who at that time was vice-president of the Standard Oil Company, as being very much interested in this product. [307]

The Clerk: Peck v. Shell Oil Company on trial.

Mr. Hackley: Ready. It is my understanding, your Honor, that the plaintiffs' opening case will proceed at this time, and I will call Mr. Goth.

OTTO WILLIAM GOTH,

Called for the Plaintiffs; Sworn.

The Clerk: Please state your full name to the Court.

A. Otto William Goth.

Direct Examination

Mr. Hackley: Q. Will you state your full name, age, and residence address, please.

A. Otto William Goth, forty-five, 1515 Rose Street, Berkeley.

Q. What is your occupation?

A. Coremaker.

(Testimony of Otto William Goth.)

Q. How long have you been engaged in coremaking activities? A. Thirty-one years.

Q. By whom are you employed?

A. H. C. Macauley Foundry Company.

Q. Located where?

A. Sixth and Carlton Streets, Berkeley.

Q. What are generally your duties as a coremaker at Macauley Foundry at this time?

A. Making cores.

Q. Are you in charge of the department or just another one of the men?

A. Just one of the men.

Q. You have been with H. C. Macauley Company how long? A. Thirty-one years.

Q. All of the time you have worked with coremaking?

A. Just with the exception of four months when I was in the hospital, when I was hurt. [308]

Q. Were you working for H. C. Macauley Company in 1937, '38 and '39? A. Yes.

Q. Are you acquainted with Allan B. Ruddle, one of the parties to this action? A. Yes.

Q. How long have you known Mr. Ruddle?

A. I met him in the latter part of 1937.

Q. In what connection?

A. When he came in with that oil that he had.

Q. What do you refer to as "that oil that he had"?

A. That solution that he had for making cores.

Q. A core oil? A. Yes.

(Testimony of Otto William Goth.)

Q. Will you tell us just what you know about Mr. Ruddie's work with the Macauley Foundry when he first came in?

A. Well, when he first came in with this, it was experimental. The foreman—rather, the superintendent was the man who brought him down to me and told me he wanted to make some experiments.

Q. What is the name of the superintendent?

A. Olson.

Q. With H. C. Macauley?

A. Yes. He isn't there any more.

Q. Continue, if you will, please.

A. And so he brought this Mr. Ruddie down to me and explained that he wanted me to make some experiments with him, wanted me to do the work. So I asked him what he wanted to do, so he showed it to me. He said, "It is not exactly an oil"—the foreman said this—he said, "We are going to work in chemicals." He said, "I want you to experiment with it," and he said, "I don't know nothing about it; none of us know nothing about it. What I want you to do is try it out."

Q. Go right ahead.

A. Then we started out to make the experiments with it, making different cores, and first, I had an awful lot of trouble with it. I couldn't get it to work [309] right, that is, to dry.

Q. What kind of a core oil was this?

A. When he first came in, Mr. Ruddie had a mineral oil with a solution that he was using, and

(Testimony of Otto William Goth.)

by using these we couldn't get it to dry; we couldn't get it to work that way like the ordinary oil would work.

Q. How long did you continue working in this initial stage with the oils?

A. Oh, close to four months.

Q. Up to about what time?

A. The latter part of 1937, about October, I think, something like that.

Q. Then what took place?

A. Then we found that by casting—we got some castings made with this mineral oil and we couldn't get it out of the castings, so we explained to Mr. Ruddle he would have to get something else to work the solution in order to burn the core away. With the solution the way it was we couldn't burn it away.

Q. Did he develop any other oil and bring it to you?

A. He brought some asphalt, then he made his mixtures with the asphalt.

Q. Using the asphalt instead of the mineral oil?

A. Yes, that took the place of the mineral oil.

Q. Did he still use this chemical you spoke of?

A. Yes, the chemical and the asphalt.

Q. Did Mr. Ruddle ever tell you what that chemical was? A. No.

Q. What did it look like, do you remember?

A. It looks like—a light yellowish cream color, I would say, like water.

(Testimony of Otto William Goth.)

Q. It is a liquid, is it? A. A liquid, yes.

Q. Rather a thin liquid, something of that sort?

A. Yes.

Q. And then you started to make cores, if I understand, with the asphalt? A. Yes. [310]

Q. And this solution? A. Yes.

Q. Did you yourself make cores with it?

A. Quite a number of them.

Q. And you would fix the date as to when you started that as what?

A. I don't know the date I started.

Q. Well, approximately, in time. Was this still in 1937? A. 1937, yes.

Q. About what part of the year?

A. I would have to guess. I would say about October.

Q. In the latter part of the year?

A. Yes.

Q. Who made the solution that Mr. Ruddie gave to you? Did you make it, or did he just supply it? A. He brought it in himself.

Q. And did he bring in the asphalt too?

A. Yes.

Q. Do you know anything about that asphalt, what kind of asphalt it was?

A. No, just that I heard him say it was emulsified, that is all.

Q. Did he tell you it was emulsified asphalt?

A. Yes.

Q. Did he say anything about it to you?

(Testimony of Otto William Goth.)

A. No.

Q. That is, he didn't describe its constituents or anything? A. No.

Q. Can you tell us whether or not Mr. Ruddle said anything about discussing the ingredients of his core oil with other people?

Mr. Aurich: Same objection. [311]

The Court: Objection sustained.

Mr. Hackley: I asked the witness, your Honor, to state whether or not it occurred.

The Court: It is leading and suggestive.

Mr. Hackley: Pardon me, your Honor.

Q. Mr. Goth, did Mr. Ruddle say anything about that core oil or its constituents other than what you have told us, that is, that he named it to you as asphalt?

A. No, he said it was asphalt.

Q. What did you do with the asphalt core oil that he described to you?

A. He did all the mixing himself.

Q. What do you mean by that exactly?

A. What he used was sand and solution and then his asphalt, and he made the mixture for us. All I was supposed to do was just make the cores and try them out.

Q. Did you ever do that? A. Oh, yes.

Q. At that time, in the latter part of 1937?

A. Yes.

Q. Tell us about the cores that you made, what kind of cores they were, and how they worked.

(Testimony of Otto William Goth.)

A. The cores came out of the box nice; they didn't stick or anything, but the trouble I had was drying the cores, the same as I had with the other oil, the mineral oil; I couldn't dry them. I said to quite a number of the different fellows that came in there, I said, "This stuff will work all right, but it won't work with open flame gas," and most of them laughed at me.

Q. You say most of them laughed at you?

A. The different fellows. Mr. Ruddie had quite a few different men that always used to come to look at the cores that we made there.

Q. Did you ever make any successful cores with this core oil? A. Oh, yes. [312]

Q. Under what circumstances did you make successful cores?

A. Well, the way I operated, I ran all the other—my work—I used to run until three o'clock, then maybe at about twenty after three or half past I used to shut the oven off, turn off both valves on the oven, shut off as much gas as I could, then in the meantime I would make the cores, then about four-fifteen or four-ten I would put Mr. Ruddie's cores in the oven. In one hour it would drop down from about 550 to about 150 degrees, and that way I was able to make the core, with no fire in the oven.

Q. And how did they come out when you worked that way? A. Came out all right.

Q. What would you say, as a coremaker, was the kind of a core that was produced by this product?

(Testimony of Otto William Goth.)

A. I think Mr. Ruddle's was a good core.

Q. What did it look like in comparison, say, with other cores? A. It was smoother.

Q. What kind of core oil were you using in 1937 in the Macauley plant?

A. Using Houghton.

Q. How did Mr. Ruddle's cores compare with those made with Houghton oil?

A. Practically the same thing.

Q. Were any of the Ruddle cores ever used to make castings? A. Oh, yes, lots of them.

Q. Did you see the castings after they were made? A. Oh, yes.

Q. What kind of castings came off the Ruddle cores? A. Good castings.

Q. Have you any samples of cores made with the Ruddle product? A. Yes.

Q. And have you them here in the courtroom?

A. Yes.

Q. I will show you a core and ask you if you can identify it. [313] A. Yes.

Q. What is that?

A. That is Ruddle's core.

Q. When was that made?

Mr. Aurich: I object to this line of examination, your Honor, in that this core is evidently made by someone out of the presence of defendants, and as a result of ex parte tests to which the defendants were not invited, nor were any of their representatives.

(Testimony of Otto William Goth.)

Mr. Hackley: These are not in the nature of tests, merely to illustrate the witness' testimony of what he refers to as a Ruddle core, and he will describe the making of that core, I assume.

The Court: The objection will be sustained.

Mr. Hackley: Q. Did you make the core that you have shown here yourself?

A. Those cores there?

Q. Or was it made under your direction?

A. Made under my direction—I didn't make those cores, no.

Q. Was it made under your direction?

Mr. Aurich: The same objection.

Mr. Hackley: I just want to identify it, and I will offer it for identification.

The Court: You might identify it.

The Witness: No, I didn't make the core.

The Court: Q. Who made it?

A. The other man sitting down at the end there.

Mr. Hackley: Q. What?

A. Antonio, sitting on the end.

The Court: Q. The men sitting in the courtroom with you?

A. Yes.

Mr. Hackley: Q. Did he make it under your direction, Mr. Goth?

A. Yes. [314]

Q. You were present when he was making the core, were you? A. Yes.

Q. Does this core that you have shown here illustrate what you mean by a Ruddle core?

(Testimony of Otto William Goth.)

A. Yes——

Mr. Aurich: Same objection, your Honor.

Mr. Hackley: Again, I offer the core identified by the witness, purely to identify his testimony.

The Court: For what purpose?

Mr. Hackley: To illustrate his testimony.

The Court: Illustrate it in what manner?

Mr. Hackley: That that is a core made by him.

The Court: Assuming that it is the core, what about it?

Mr. Hackley: That it is a sample of a Ruddle core.

The Court: All right, supposing it is a sample, what about it?

Mr. Hackley: We propose to show with the cores that we have here that the Ruddle core will, under test, make a satisfactory core for all purposes. This witness' testimony will continue from this point and go to that end, that it will meet all the requirements of a good foundry core. We will show through this witness, and illustrate his testimony with the cores he has made, precisely what he means by a good foundry core and a good core.

The Court: What do you mean by "a good foundry core"?

The Witness: That means a core so far as it is—smooth, and it won't blow or won't scatter. Some of them was made with blackening and some of them was made without blackening——

Mr. Aurich: So far as my objection is con-

(Testimony of Otto William Goth.)

cerned, your Honor, if counsel wants to use ex parte tests in this manner, I will have no objection provided defendants are going to be [315] afforded the same opportunity.

Mr. Hackley: So far as that is concerned, I don't want to call this a test. This is not a test; this is something this witness has made to illustrate what he is talking about, your Honor. So far as tests are concerned, if we want to perform tests in this case I think they should be inter partes tests, and I will make an offer to make those tests if you wish, Mr. Aurich.

Mr. Aurich: Whether you call it tests or what you call it, the result is the same. Here is a core made out of the presence of the defendants at an operation during which the defendants had no opportunity to be present and observe the making. My objection is that it is an ex parte occurrence. Now, if you want to waive that objection and admit that both sides can do the same thing, I have no objection, I will be glad to waive my objection; otherwise I will stand on it.

Mr. Hackley: So far as tests are concerned, your Honor, I agree with counsel that ex parte tests have no presence in a case of this character; that they are much more satisfactory and more generally received only if they are inter partes tests. In this case I have offered this core only as illustrative of the witness' testimony of what he himself has done with his own hands or under his own direction.

(Testimony of Otto William Goth.)

The Court: You may develop the facts through the witness.

Mr. Hackley: Q. Have you ever made any cores yourself, personally, with the Ruddle solution? A. Yes.

Mr. Aurich: I object to that and move to strike the answer on the ground this witness does not know what Ruddle solution is.

Mr. Hackley: He has described what he has called the [316] Ruddle product, the Ruddle solution——

Mr. Aurich: I would like to have him tell me at this stage of the proceeding what the Ruddle solution is, right now.

Mr. Hackley: I don't know, but this witness says——

The Court: I am expected to know what it is, and I don't know any more about it after three days than the first day I started; isn't that interesting? Let the record show that. Proceed now, gentlemen.

Mr. Hackley: Q. Mr. Goth, you have testified that you have made cores with the product which Mr. Ruddle brought in. You stated that that product was composed of an asphalt emulsion, is that correct? A. Yes.

Q. And a solution which he produced?

A. Yes.

Q. Did you know the constituents of that solution yourself? A. No.

(Testimony of Otto William Goth.)

Q. All you knew about it was what you described a moment ago, that it was a thin, yellow liquid? A. Yes.

Q. Something like water? A. Yes.

Q. You never have had any more information than that about it, have you? A. No.

Q. Just what did you do when you made cores with that product—what do you call that, Ruddle's product, or Ruddle's oil, or what?

A. Ruddle—that is all I knew it by, Ruddle's solution. That is the only name I ever used for it.

Q. The name you used here a few moments ago in your testimony? A. Yes.

Q. Now, you say the Ruddle solution is the asphalt emulsion and this liquid Mr. Ruddle brought in? A. Yes.

Q. Those two together made a core oil, is that correct? A. Yes. [317]

Q. You used those to make cores?

A. Right.

Q. Now, will you describe just what you did yourself to make cores with Ruddle's product?

A. Mr. Ruddle himself, he did all the mixing.

Q. That is, he mixed the asphalt—

A. He did all the mixing himself.

Q. Tell us just what he did if he did it in your presence.

A. He took—say, for instance, he had three riddles there, whatever the job called for—I would tell him, "Make two riddles, make three, make

(Testimony of Otto William Goth.)

four"—how much I needed for the class of work I was making.

Q. Riddles full of what?

A. Of sand, to get ready to make the core, and he would do his own mixing and everything, and when he would have it all ready he would tell me. He was working at the opposite bench from me. He said, "I have got the oil ready", and I would—if I was making a Union cylinder head or a Hall-Scott head or Jackson Series pumps, deep well pumps, and lots of other different things we had there——

Q. Did you see Mr. Ruddle at any time mixing the sand with these products?

A. Oh, yes, always seen him mix it.

Q. How did he go about mixing it?

A. He would take all the sand on the bench—he had a special bench for that, a bench about twelve feet long, and he put all the sand up there and put the solution in the riddle, then he would have the riddle on this side and then he would have the riddle back on the other side (indicating).

Q. What do you mean by the riddle——

A. Shake them through the select sieve.

Q. Continue.

A. Then he would ask me to feel it, and I would feel the texture; I could feel if it was wet or dry [318] enough. He pretty nearly always had it right, the right texture for it. Then I would make the core for whatever I would make, either cylinder head—might be making a pump—whatever the

(Testimony of Otto William Goth.)

superintendent told me to make that night. I always done that work after half past three.

Q. Did you see him mix these liquids from asphalt emulsion and the other solution or liquid?

A. Yes, I did.

Q. What order did he mix those in? Did he put them in together or separately, or how?

A. First he put in the emulsion, then he put in this asphalt.

Q. Did he first stir sand up with the solution?

A. He stirred up the sand first, then he put in his asphalt, then he would mix them together.

Q. Then you would use the product which he made up that day on the core sand? A. Yes.

Q. And to make cores, is that correct?

A. That is right.

Q. This was all in the latter part of 1937, is that correct? A. Yes, 1937.

Q. At that time that you described, how did the core sand and Ruddle work to make cores? Will you describe just how it worked, particularly in comparison with other core sands that you know of?

A. Well, with the other core sand in the ovens I would have to use 550 degrees of heat.

Q. Which core sand is that?

A. That is the Houghton oil; that is the oil sand. But when I worked with Mr. Ruddle before, I had to cut the fires off completely; I couldn't use no fire with it, because if I used the gas flame in the oven it wouldn't work. In other words, it would

(Testimony of Otto William Goth.)

just crumble away, like. Now, after the oven was shut off, say, for forty-five minutes, then I put this core in for only half an hour—twenty minutes to [319] half an hour and the core would be dry, with no fire.

Q. How did the Ruddle core sand act in the core boxes? A. Come out nice and smooth.

Q. Did it stick to the box? A. No. [319A]

Q. Did you ever have any trouble with that?

A. No.

Q. How many cores did you make with Ruddle's core sand over the period of months he was in there? I am referring now to this last product you described.

A. Well, I made so many different things—I made gates out of it, made handle cores—all kinds of things.

Q. All kinds of jobs? A. Yes.

Q. How about size? How large were the cores that you made?

A. The cylinder heads were about that long (indicating).

Q. How long is that in feet?

A. The exact measurement would be about three feet four inches, the size I was making at that time.

Q. How thick is that core?

A. Those cores vary; one place there is six inches, maybe, of sand, and another place four inches of sand.

Q. Did you make the cores for those heads out of Ruddle Solution? A. Yes.

(Testimony of Otto William Goth.)

Q. You understand when I say "Ruddle Solution," I am referring to the two products he has mentioned here. A. Yes.

Q. That is, the asphalt and the liquid, is that correct? A. Yes.

Q. What kind of cores did those make?

A. Made a very good core.

Q. How did they compare with the Houghton Oil cores that you make?

A. About the same thing.

Q. Did you make Houghton Oil cores for those large cylinder heads, Hall-Scott cylinder heads?

A. Yes; those are made in the morning, and use those boxes at night again. You see, I tried that sand on aluminum boxes and I tried it in aluminum driers. Then I tried it in redwood boxes, mahogany boxes, some painted, some unpainted, some shel-lacked, and some other things we have there. [320]

Q. You are referring to the Ruddle product?

A. Yes.

Q. How did it work under those conditions?

A. It worked all right.

Q. That was on these large heads. How did the Ruddle product work on small articles?

A. It worked the same way. You see, I will have to explain something to you again now. With the Houghton Oil, when we make a cylinder head, we use maybe three different kinds of sand—stronger, weaker, and stronger at different points. But the Duddle sand, we use the straight sand all the way through.

(Testimony of Otto William Goth.)

Q. Just use the one kind of sand?

A. Yes, all the way through.

Q. And, as I understand, you got as good a product with the Ruddell Solution?

A. Yes; those were all test articles.

Q. Were castings poured with those cores you have just mentioned?

A. Oh, yes.

Q. And how did those castings come out?

A. They were all right.

Q. Did you examine them?

A. Yes, we broke them up and everything else, to see how the jackets were inside, and everything.

Q. How were they?

A. All right.

Q. What do you mean by "All right"?

A. All right means there were no burning spots in them, no blowholes.

Q. Have you any estimate of how many cores you made altogether with the Ruddell Solution or the Ruddell product over the period of those several months?

A. I made so many different ones, big ones and medium-sized ones, I wouldn't know exactly.

Q. No, but could you give us an estimate in number? Would it be a few, or a great many?

A. Quite a few; I made quite a few.

Q. What do you mean by "Quite a few," now? Can you tell us that? Five, ten, or what?

A. No. I can tell you on the [321] cylinder heads I made about, oh, eight, I guess—eight or ten. And then on the smaller ones—you see, there

(Testimony of Otto William Goth.)

was a $4\frac{3}{4}$ cylinder head; I made about six of that. And then another four-cylinder one, maybe about, say, six of them. And then on the Union Diesel, I made two, I think it was; and then I made hundreds of cores for handles out of it, gate cores, cake cores, cores made up to see how the solution worked through it, and everything else.

Q. How about the Ruddle core? How did the Ruddle core sand work?

A. It worked medium all the way through.

Q. Did it work as well as the Houghton core oil sand?

A. I guess it would. We make cores sometimes a foot square, about that high (indicating). We dry that in the oven, where in the Houghton we would have to back that up, that is, using sharp sand on the outside, so it wouldn't collapse and fall down; and on the Ruddle we eliminated all that. It had more body, like.

Q. The Ruddle product would stand by itself?

A. Yes.

Q. Were you present at any time after the castings were made when attempts were made to get the Ruddle core sand out of the casting?

A. I was on two occasions in the shipping room, where I helped to break up one of the castings to see how it was inside.

Q. How did the Ruddle product come out?

A. It came out all right.

Q. Did you have any trouble with it sticking in the casting? A. No.

(Testimony of Otto William Goth.)

Q. Did it work in that respect as well as the Houghton Oil sand?

A. Yes; it ran out just the same.

Q. Do you use the word "friable" in your foundry? A. No.

Q. You do not use that term at all?

A. No.

Q. What do you call this matter of sand coming out of the casting?

A. We just call it running out, that is all. [322]

Q. How did the Ruddle product run out of the casting, say, as compared with Houghton Oil?

A. Out of the cylinder head, do you mean?

Q. Yes. A. Ran out all right.

Q. Did you ever study the Ruddle sand with reference to its use on the bench, as to how long it would last or be workable on the bench?

A. Well, sometimes we have maybe a shovelfull or two left over.

Q. After an afternoon's work?

A. Yes. And all we do with our sand is cover it with a wet sack, that is all, and leave it there.

Q. You do that with your Houghton Oil sand?

A. Oh, yes.

Q. Could you use that sand again at a later time, the Ruddle sand? A. Yes, sure.

Q. How long could you permit it to stand covered over with a sack and still have it workable.

A. I never tried. I left it there at the most two days, and used it again maybe the day after.

Q. Did it work perfectly all right?

(Testimony of Otto William Goth.)

A. It worked all right, yes. See, those benches—I am right between two big ovens in there. There is one oven behind me about 11 feet, and another big oven right beside us there, and it is quite warm in there all day long, too.

Q. What effect does that have on sand?

A. That will affect to dry your sand up.

Q. But you do not, if I understand you, have any trouble with that on Ruddle's sand?

A. No.

Q. If you cover it with a sack, is that right?

A. Yes; and, of course, if you left it out, it would do the same as the other sand; it would start to dry. [323]

Q. That happens with the Houghton sand, too, does it? A. Yes, it dries out.

Q. How is the strength of cores made with Ruddle's product, the cores that you made?

A. The cores were mixed about the same.

Q. Was it sufficient for core-making purposes?

A. Oh, yes.

Q. Mr. Goth, you have described these cores made with the Ruddle product as being strong enough for casting, is that correct? A. Correct.

Q. And you have described them as being able to be poured out of the casting after the casting had been poured, or run out, is that your phrase?

A. Yes.

Q. Perfectly all right. Are those the same cores, that is, in strength, that run out?

A. Just about the same.

(Testimony of Otto William Goth.)

Q. I do not know that I got this point over to you. I am trying to avoid leading you on the subject. But can you tell me this: Is a core which is strong enough to support the casting and to be used in pouring a casting, still able to run out of the casting after the casting is made?

A. Yes. Are you speaking of cylinder heads?

Q. Well, whatever it may be—cylinder heads. Say cylinder heads, yes.

A. All right. Yes. You mean the same strength and body [324] in the core?

Q. Yes. A. Yes, the same strength.

Q. And those cores pour, run out of the casting all right, do they?

A. The idea of it is, the sand has to burn away inside; that is the whole idea of it.

Q. Did that occur in the Ruddle cores?

A. Yes.

Q. This is the Ruddle core you are describing here? A. Yes.

Q. Did you ever have any trouble with the Ruddle product, other than the fact that you could not make them in the presence of the open gas, as you described?

A. No, that was the main trouble, was the drying.

Q. Did you have any other troubles?

A. No.

Q. I believe you said you made hundreds of cores over the period of time you have been in a foundry.

A. Lots of cores, yes.

(Testimony of Otto William Goth.)

Q. Over how many months did you work with the Ruddle product?

A. You mean from the beginning to the end?

Q. Yes.

A. I would say about eight months; maybe a few days less, maybe a few days over. I am not sure. That was on and off. That wasn't continuously, all the time. That was on and off during that period of eight months.

Q. If I understood you, you would work with that sand under the instructions of Mr. Olson?

A. Yes.

Q. And you did most of that work after your regular day's work was over?

A. After my regular day's work was through—half past two, three o'clock, sometimes I get through a little bit later—whenever I did I would work on that stuff.

Q. Did you ever have any trouble with the solutions of Ruddle, either the liquid or the asphalt itself, settling out of the product when it stood?

A. After the core was made?

Q. Yes.

A. No. I had that with the mineral oil. That is where [325] I had the trouble before, but he changed that.

Q. But not with the asphalt product?

A. No.

Q. Did you ever have any trouble with the cores, after they were made, absorbing moisture from the atmosphere? A. No.

(Testimony of Otto William Goth.)

Q. Did you ever have any cores lying around long enough to observe them?

A. I had about 60—no, close to 100 cores lying around a year and two months ago, and we had to make room, and we threw them all away. There was almost a hundred cores still laying there—different samples—gates, handle cores, and I forget what.

Q. What kind of condition were they in when you threw them away after a year and a half?

A. Just the same as when they were made. Of course, they were all covered with dust, but they were still there.

Q. Had they absorbed any moisture, that you could observe? A. No.

Q. Were those cores indoors or outdoors?

A. Indoors.

Q. Indoors? A. Indoors.

The Court: Get through with this witness.

Mr. Hackley: Q. Does this core which you have shown here a few moments ago illustrate what you mean by a good core made with the Ruddle product?

Mr. Aurich: The same objection, your Honor.

The Court: Objection sustained.

Mr. Hackley: I will offer the product identified by the witness as the plaintiffs' exhibit next in order for identification, if your Honor please. I believe that is Exhibit 39.

(The core referred to was marked Plaintiff's Exhibit No. 39 for identification.)

Mr. Hackley: Q. How was this core, Exhibit 39 for identifi- [326] cation, baked, if you know?

(Testimony of Otto William Goth.)

A. That was baked after the fire was shut off.

Q. Did you ever make any cores, or observe any cores made with the Ruddie product, where the baking occurred during the time that the oven was on?

A. Yes.

Q. And with a hood over the cores?

A. Yes.

Q. How did those cores come out?

A. They came out all right.

Mr. Hackley: That is all.

Cross Examination

Mr. Aurich: Q. Mr. Goth, I understood you to say you worked approximately eight months with Mr. Ruddie's core oils at Macauley's?

A. Yes, about that time.

Q. Part of that time was with the mineral oil and part of the time was with the asphalt emulsion?

A. Yes.

Q. Can you tell me just generally how much time was with the asphalt emulsion and Mr. Ruddie's so-called solution, and how much time with the mineral oil and the solution?

A. Well, I would say about four months apiece.

Q. About four months in each?

A. Something like that.

Q. And would the number of cores that you made with each be about the same, or did you make more cores with one than with the other?

A. I exactly couldn't say.

Q. You never attempted to use Mr. Ruddie's core

(Testimony of Otto William Goth.)

oil in the regular production operations at the Macauley Foundry?

A. No; that was all just test work.

Mr. Aurich: That is all.

The Court: Q. What kind of work is Macauley doing now?

A. Right now we are supplying V-12 submarine chasers—that is Hall-Scott work; Union Diesel, Commander motors, Offenheimer motors in Los Angeles, there is some Jackson work—of course, that is [327] being done in Los Angeles.

Q. How many core-makers and molders have you?

A. The last report I turned in to the Journey-men's Local at the last meeting was 246.

Q. Molders?

A. No; that is everybody. There is 68 molders—I mean core-makers; and I think there is—there is 96 all told; that is, the snap room.

Q. How many master core-makers now?

A. Sixty-two, I think.

Q. What do they use now in the making of cores?

A. We are using Houghton Oil.

Q. What is Houghton Oil, as best you can describe?

A. Well, it is something like linseed oil. It has some linseed in it.

Q. It is a solution of linseed?

A. I don't know what they have—they have China Oil in it, they have linseed—they have quite a number of things in it; I don't know exactly what

(Testimony of Otto William Goth.)

they are. You see, all the cylinder heads, all the Hall-Scott cylinder blocks, that is all made in dry sand, that is, dried overnight in cores. That is all the work that is done on the floor.

Q. And tell me, of all these cores that you made during the period here in 1937, how many pounds of castings were produced from the cores you made, generally? A. From Mr. Ruddie's?

Q. Yes; just your best estimate.

A. You mean tonnage?

Q. Yes. Was there a ton?

A. Oh, yes, a ton all right; more than that. You see——

Q. What kind of castings were they?

A. Cylinder heads, pumps—you see, if you make like two pumps, you would break one up to see how the sand would work. Olson would say, "That is a dandy," and let it go through, sell them, let it go through with the orders?

Q. Approximately how many?

A. Well, I would say a ton. [328]

Q. A ton? A. Yes.

Q. In that eight months?

A. Yes. See, there was no full time work on it at all. It was just—there wasn't much to do at a time, and Bill let them go through. What the shop was after, they thought they could save an awful lot of money on gas. Now, we have a battery of 19 ovens running in there, and that is an awful gas bill every year.

(Testimony of Otto William Goth.)

Q. Tell me how many electric drying machines have you?

A. We have no electric machines.

Q. In California, anywhere?

A. I don't know.

Q. You do not know of any, do you?

A. No, I don't.

Q. Aside from the furnaces that fire by gas, what other method do they use?

A. If they shut the gas off, no more coke.

Q. I mean foundries generally, if you know, California and the Western States.

A. Fire with coke.

Q. That is all? A. Yes.

Q. The thing hasn't changed very much since I used to make cores.

A. Were you a core-maker?

Q. Yes. A. I never knew that.

Q. Only I was at the work ten years before you got started. A. I got started in 1910.

Q. That is rather interesting, isn't it?

A. Very interesting work.

Q. You go back and tell them over there you met a core-maker today who is sitting on the bench.

A. I will tell them. Do you know Silverfoot?

Q. Yes.

A. The gentleman is pretty near gone. The doctors gave him up last week.

The Court: That is all. Thank you, sir.

Mr. Hackley: May I ask the witness a couple of questions, [329] your Honor, before he leaves?

(Testimony of Otto William Goth.)

The Court: If you gentlemen who are presenting this case would realize I have read the pleadings over carefully, what we have been enacting here for the last four or five days, you would be amazed.

That is all. Step down.

Mr. Hackley: Then I may not ask the question I have?

The Court: You can ask any questions you want.

Mr. Hackley: This man is over from the plant. I would have to call him back.

Mr. Goth, will you take the stand for just a second?

Q. Did you make any comparison of the baking time of Ruddle cores and cores made with Houghton Oil?

A. Well, the only comparison you can take with that, now, that core that was there, with Houghton Oil——

Q. You refer to this core for identification here, Exhibit 39?

A. Yes. With Houghton Oil, under 550 degrees of heat, that would take about 45 minutes to dry thoroughly through.

Q. How long did this core take to bake, if you know?

A. I had to bring the oven down, shut the fires off; 25 minutes with no fire in it.

Q. What was the temperature?

A. 150; maybe less than that—just enough heat in it to dry it, that is all.

Q. Would you be able to use the Ruddle core oil

(Testimony of Otto William Goth.)

which you have testified about here, the asphalt product, in regular production in your plant, in your opinion as a core-maker?

A. Well, you would have to get something about drying that—you would either have to have an electric oven—you couldn't use it with an open flame.

Q. Other than that one thing—— [330]

A. That is the only thing I saw wrong with it.

Q. Could you use your direct fire ovens in any way with that product?

A. Well, they would have to be all rebuilt. Those burners—some burners run the full length, 58, 60 tips. Their ovens are direct-blaze ovens in there. Just how you would do that, I don't know.

Q. You are not an oven mechanic, are you?

A. No.

Mr. Hackley: Thank you.

I have one other witness from the foundry, your Honor, that I would like to put on here.

ANTHONY ANACLERIO,

Called for the Plaintiffs; Sworn.

The Court: Q. You heard the last witness on the stand, did you? A. Yes, I did.

Q. Is there anything other than what he said that you could tell us about?

A. Well, I made some cores myself.

The Court: All right, proceed.

Mr. Hackley: If I asked that question it would be leading.

(Testimony of Anthony Anaclerio.)

The Court: To save time, gentlemen; I think we are wasting a lot of time.

Direct Examination

Mr. Hackley: Q. Mr. Anaclerio, you have listened to the testimony of Mr. Goth a moment ago. You work with him over at the plant?

A. Yes, I do.

Q. The Macauley plant? A. Yes.

Q. What is your job over there?

A. I am a core-maker.

Q. How long have you been working at Macauley's?

A. Well, I have been with the firm about eight years.

Q. Continuously?

A. No; sir years at one time—about seven [331] years at one time, and about a year this time.

Q. When did you leave the plant after the first experience? A. About 1928.

Q. And went to work somewhere else?

A. Yes, I did.

Q. As a core-maker? A. Yes.

Q. Where?

A. Best Foundry, San Leandro.

Q. That is the Best tractor people?

A. Yes.

Q. And you worked at that time until you went back to Macauley?

A. I went back to work—it was the same company; they had two foundries—the Atlas Diesel Engine Company.

(Testimony of Anthony Anaclerio.)

Q. And then about a year ago you went back to work at Macauley's? A. Macauley's.

Q. About how long have you been making cores?

A. About 15 years.

Q. Is that a family tradition with your family?

A. Yes. May I say, my father worked with the judge here 35 years ago.

The Court: I knew I would be discovered before I got through.

Mr. Hackley: I did not know that was going to be the answer.

Q. Your father worked as a core-maker before you?

The Court: He worked with me 35 years ago, his father.

Mr. Hackley: Q. What was your father's name, by the way? A. Frank; Frank Anaclerio.

Q. Is he still living?

A. Still living and still molding.

Q. Where is he working, by the way?

A. The Atlas Diesel Engine Company; 72 years old.

Q. Are you acquainted with Mr. Ruddle, one of the parties in this case?

A. Well, not very long, but I have met the man.

Q. When did you first meet him?

A. About 10 days ago.

Q. Under what circumstances?

A. Well, he came there with some stuff to make cores, and he mixed it up, and I made the cores for him. [332]

(Testimony of Anthony Anaclerio.)

Q. Who instructed you to make the cores for Mr. Ruddle? A. Mr. Goth.

Q. Did Mr. Silverfoot authorize it, do you know?

A. Did he what?

Q. Did Mr. Silverfoot authorize it? You work under him, don't you?

A. Yes. Yes, he did.

Q. You said Mr. Ruddle brought you some stuff. Did you bring to court this morning a sample of some of that material? A. Yes, I did.

Q. Are these the samples I have in my hand?

A. Yes, they are.

Q. What is this I have in a bottle here? Is that one of the products he brought to you?

A. Yes.

Q. Do you know what it is made up of?

A. No, I do not.

Q. All you know is what you see in the bottle?

A. What I see in the bottle.

Q. You brought this over with you this morning?

A. Yes.

Q. And this is the product you used, yourself, to make cores? A. Yes.

Mr. Hackley: I offer for identification as Plaintiffs' Exhibit 40 the sample of the liquid which the witness has identified as having been used in making certain cores. For the record, I might tell you this is what is known as the Ruddle Solution. You are welcome to have any sample that you wish.

Mr. Aurich: If you can tell me what the formula

(Testimony of Anthony Anaclerio.)

of Ruddle Solution is, I would rather have that than the sample.

Mr. Hackley: Mr. Ruddle told you in the testimony yesterday, told you exactly how it was made.

(The bottle of solution referred to was marked Plaintiffs' Exhibit No. 40 for identification.)

Mr. Hackley: Q. What is this other container we have here? [333]

A. I don't know what it is. I call it tar. It is an emulsion of some kind.

Q. Some kind of petroleum product?

A. Yes.

Q. And this is another product you used in making the cores, is it? A. Is it another?

Q. Is it another one of the products you used to make the Ruddles cores? A. Yes.

Q. You brought that with you this morning?

A. Yes.

The Court: Q. How did you use that in making cores? You tell me that yourself. How did you use this product?

A. Well, when Mr. Ruddle first came there, he mixed it up himself out of both of those there.

Q. You know nothing about it, only he mixed something?

A. Yes; I don't know nothing about it.

Q. Don't know now?

A. What do you mean?

Q. About what the contents of these things are?

(Testimony of Anthony Anaclerio.)

A. I don't know what it is, what is mixed in it.

Mr. Hackley: Q. Did you make any core sand out of it yourself?

A. Yes; last night around four o'clock I made a guess at it, mixed it up, and made some cores myself out of it. And I will say they came out very nice.

The Court: After you fellows get all through guessing, then you expect me to guess.

The Witness: I mean by that I wanted to make some cores, because we had nothing to do, so I just remembered—watched him, how he mixed it—and I thought I put the same amount in, and I made some cores, and, I take it, they are in the box.

Mr. Hackley: I offer the bucket of asphalt the witness has identified as Plaintiffs' Exhibit 41 for identification.

(The bucket of asphalt referred to was marked Plaintiffs' [334] Exhibit No. 41 for identification.)

Mr. Hackley: Q. You testified that you made some cores last night? A. Yes.

Q. Yourself? A. I did.

Q. Approximately what proportions——

The Court: He guessed on everything he did last night. We are not interested in what he did last night. I am sure that I am not. So don't waste any time.

Mr. Hackley: If your Honor please, the witness testified here——

The Court: The Court has ruled. I don't want to hear anything further under the circumstances.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: May I make an offer of proof, your Honor?

The Court: Proceed.

Mr. Hackley: I propose to prove by this witness——

The Court: Not what you propose to do. Proceed. I will sustain the objection to that line of testimony. Now, proceed.

Mr. Hackley: Do I understand, then, I am prevented from presenting evidence of these cores that the witness made last night?

The Court: I am not indicating anything. You proceed.

Mr. Hackley: Q. What do you mean when you say you used these proportions?

A. I didn't know the right amount that he put in there, you see, because——

Q. But you had observed him making cores before. A. Oh, yes, I watched him, yes.

Q. Did you try to use the same proportions?

A. I did. I came very close.

Q. You think you came very close?

A. To the best of my knowledge I did, yes. [335]

Q. What proportion of sand to this liquid did you use? A. About twenty to one.

Mr. Aurich: I object to this entire line of interrogation, your Honor. It is quite evident it is going to the point where this witness has made some cores and they are going to introduce the cores; and I make the same objection I made to the testimony of Mr. Goth when the other cores were introduced.

(Testimony of Anthony Anaclerio.)

The Court: The objection will be sustained.

Mr. Hackley: Simply to complete the record, your Honor, I would like to ask the witness if he can identify the core that he made. I think I have it here.

Q. You stated you tried to follow the proportions you observed Mr. Ruddle use? A. Yes.

Q. And if I understand you, you believe you did follow those proportions? A. Yes.

Q. If not exactly, very closely, is that correct?

A. Very close, sure.

Q. Is this core which I show to you the core that you referred to as having made last night?

A. Yes, it is.

Q. Where was that made?

A. Macauley Foundry.

Q. By you, yourself? A. By myself.

Q. You mixed all the ingredients to make the sand? A. Yes, I did.

Q. Who baked the core? A. I did, myself.

Q. How long did you bake it to get it in this condition?

A. That core there was in the oven 11 minutes when I took it out.

Q. Is that a completely baked core?

A. Yes, it is.

Q. Is that core now ready for casting?

A. Yes, it is. If it wasn't completely baked, you couldn't hold it that way; it would break in your hands. [336]

Q. You brought this over yourself this morning?

(Testimony of Anthony Anaclerio.)

A. I did, yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 42 the core identified by the witness. I am making that as an offer in evidence, not because I am unconscious of the Court's ruling, but because I want my record.

The Court: You can see this record discloses you are not entitled to produce this evidence, because the parties were not present and do not know anything about it.

Mr. Hackley: This is merely to illustrate the testimony. I am prepared to introduce authorities to show there is a distinct difference between what Mr. Aurich talks about, ex parte tests, and operations carried on by the witness himself, and the evidence of that operation produced to illustrate his testimony. I am not attempting to bind them by this.

The Court: The objection will be sustained.

Mr. Hackley: Therefore I will, in the light of the Court's ruling, offer for identification as Plaintiff's Exhibit 42, the core identified by the witness.

The Court: It may be marked.

(The core referred to was marked Plaintiffs' Exhibit No. 42 for identification.)

Mr. Hackley: Q. In this box you brought in this morning I see you have another core, or what at least appears to be a core, Mr. Anaclerio. Will you tell me what that is, what its history is, and all about it?

Q. Is that ore now ready for casting?

Mr. Aurich: Same objection, your Honor.

A. This core was made from the sand that Mr. Reynolds mixed.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: Q. Mr. Ruddie mixed?

A. Yes; he mixed that sand himself and I made the core.

Q. Did you make the core?

A. Yes, I did. [337]

The Court: Q. When?

A. Well, the early part of this week. I would say about Monday or Tuesday.

The Court: Same ruling as to that. Mark it for identification.

Mr. Hackley: I will ask that the core be marked for identification as Plaintiffs' Exhibit 43.

(The core referred to was marked Plaintiffs' Exhibit No. 43 for identification.)

Mr. Hackley: I would like to complete identification of it before I depart from it.

Q. This core was baked by yourself, was it?

A. Yes, it was.

Q. Under what circumstances?

A. What do you mean, under what circumstances?

Q. What was the condition of the oven? Was the fire on, off, or what?

A. No; I put a hood over it and put sand around the bottom to make it air-tight; and put holes around the top so the gas would not get in it.

Q. How long did this core take to bake?

A. Ten minutes.

Q. Do you make similar or identical cores with that Houghton Oil? A. Yes, we do.

(Testimony of Anthony Anaclerio.)

Q. How long do those cores take to bake?

A. Well, if the oven is 500 degrees it will take an hour and 45 minutes to an hour and a half to dry a core like this.

Q. Is this a completely dried core, this Exhibit 43 for identification? A. Yes, it is.

Q. Is this core ready, now, to be used to make a casting? A. Yes.

Q. How does this core, Exhibit 43 for identification, and how did the core, Exhibit 42 for identification, compare with cores made with Houghton Oil?

A. Well, how do you mean, "compare"? [338]

Q. Well, as to usefulness for casting purposes.

A. Well, personally, for drying the boxes off, I think it is much easier.

Q. How about casting?

A. It makes a nice little casting.

Q. Have you any casting that was made on any of these cores?

A. Yes, I had one made, which is down there (indicating).

Q. You have the casting here? A. Yes.

Q. Did you make the core from which the casting was made? A. Yes, I did.

Q. Was the casting like either of these two cores?

A. Yes.

Mr. Aurich: I object to the leading interrogation of this witness. I understand the witness was to be asked to identify that, but we have departed from that long since.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: This entire interrogation is for the identification of these items here, and your Honor has indicated he does not want to hear this testimony anyhow, and I am just trying to make a record and stop there.

Q. Mr. Anaclerio, was the casting that you have made from a core of the character of Exhibit 42?

A. That is the same core used for that casting.

Q. That is the type of core, is that correct?

A. Yes.

Q. You have brought with you a casting, have you?

A. Yes, I have.

Q. Is this the casting?

A. Yes, that is it.

Q. That was made from a core made by you, you said?

A. Yes.

Q. What kind of a core, like Exhibit 42?

A. The same thing there. That is the core there.

Q. That same type?

A. Yes.

Q. Made with the Ruddle product?

A. Yes.

Q. Are all these cores that you have produced, and the core from which this casting was made, made with that Ruddle product as you [339] have described?

A. Yes.

Q. Was the core from which this casting was made formed by you, yourself—that is, the core itself?

A. Yes.

Q. How about the core sand; is that made up by Mr. Ruddle or by you?

A. Mr. *Reynolds* made up the sand.

(Testimony of Anthony Anaclerio.)

Q. That was last week sometime, you testified?

A. About Tuesday; Monday or Tuesday.

Q. Did you see this casting after it was completed?

A. Yes, I did.

Q. Tell us about that.

The Court: Tell us what about it?

Mr. Hackley: Well, he observed the casting. I do not want to lead the witness, your Honor. I will put it this way:

Q. Did you see the casting after it was poured and when the core was about to be taken out?

A. Well, the sand just ran right out of it.

Q. Did you see that done?

A. It wasn't taken out; it ran right out.

Q. Is that the way a good core should act?

A. Sure. Get a bum core and it will stick all over, and it will be rough inside.

Q. Do you know whether or not this is a good casting?

A. It is a perfect casting. Uncle Sam uses them, so I think they are all right.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 44 the casting identified by the witness.

Mr. Aurich: Same objection.

The Court: Same ruling.

Mr. Hackley: Now I will offer it for identification as Plaintiffs' Exhibit 44.

(The casting referred to was marked Plaintiffs' Exhibit No. [340] 44 for identification.)

Mr. Hackley: I believe I have only offered Exhibit 42 for identification, and now being identified,

(Testimony of Anthony Anaclerio.)

I offer Exhibit 42 for identification in evidence.

Mr. Aurich: Same objection. I think that has already been offered and ruled on.

The Court: Objection sustained.

Mr. Hackley: I just wanted to be sure of my record, Mr. Aurich. Then I will repeat my offer of Exhibit 42 for identification.

The Clerk: It is already marked.

Mr. Hackley: Have I, Mr. Clerk, offered Exhibit 43 for both identification and in evidence? Is that correct?

The Clerk: As far as I know.

Mr. Hackley: I don't want to take any chance on that. I will offer Exhibit 43 in evidence, having been identified by the witness.

Mr. Aurich: Same objection.

The Court: Same ruling.

Mr. Hackley: And then I will repeat the offer for identification.

Q. Now, I will show you one more core, which is the core I was showing Mr. Goth earlier in the testimony, and ask you if you can identify that core, which is marked Exhibit 39 for identification?

Mr. Aurich: I understand this testimony is all being offered subject to my objection?

Mr. Hackley: Yes; I understand the Court has sustained the objection.

The Witness: How do you want me to identify that?

Mr. Hackley: Q. Did you make it? [341]

A. Yes; sure.

(Testimony of Anthony Anaclerio.)

Q. How can you tell?

A. I put marks on it (indicating).

Q. Indicating two marks, one the letter X, and another a part of the letter A?

A. It wasn't intended for anything; I just whacked it in there.

Q. You can identify these as made by yourself?

A. Yes; I put that in there myself.

Q. When did you make this core, Exhibit 39?

A. The early part of this week.

Q. Who mixed the sand?

A. Mr. *Reynolds* mixed it himself.

Q. By Mr. Reynolds you mean this man sitting over here?

A. Yes.

Q. The name is Ruddle, R-u-d-d-l-e.

A. That man there.

Q. You just met him in recent days?

A. Yes.

Q. Did you bake this core, Exhibit 39?

A. Yes.

Q. How long did it take to bake this core?

A. About 10 minutes.

Q. And this is the core that would take an hour and 45 minutes or so to bake?

A. Yes.

Q. Did you ever work with linseed oil in making cores?

A. Yes.

Q. Do you know how long it would take to bake Exhibit No. 39 with linseed oil?

A. I would say an hour and a half, an hour and twenty minutes.

Q. Does linseed oil and Houghton Oil act about

(Testimony of Anthony Anaclerio.)

the same as far as baking time is concerned?

A. About the same, yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 39 the core last identified by the witness.

Mr. Aurich: Same objection.

The Court: All going in subject to a motion to strike.

Is that all from this witness?

Mr. Hackley: Q. Did you work with this Ruddle sand on the [342] bench yourself? A. Yes.

Q. How did it act on the bench?

A. In what way do you mean, how did it act?

Q. Well, with reference to its length of life that you can work with it before it hardened.

A. We had a good shovelful on the bench about three days, with a damp sack over it, and it wasn't any different then than it was when it was first mixed.

Q. Was it still useful to make cores?

A. Oh, yes; I made cores.

Mr. Aurich: If this is going in subject to a motion to strike, I must insist on the leading character of the interrogation.

The Court: We are wasting a lot of time, gentlemen. Let us get through with the witness.

Mr. Hackley: You have heard the testimony of Mr. Goth about the way this Ruddle core works?

A. Yes.

Q. You were here in court, were you?

A. Yes.

(Testimony of Anthony Anaclerio.)

Q. Do you agree, or disagree, with Mr. Goth's statement? A. I agree with him.

Q. As to the action of the Ruddle product, is that correct? A. Yes.

Mr. Hackley: That is all.

Mr. Aurich: No questions.

The Court: Q. Tell me, are you married?

A. Yes.

Q. Where is your father living, in relationship to you?

A. Well, I live in Albany, right on the Berkeley line—just off the Berkeley line.

Q. Where does your father live?

A. On Fifth Street, the same place.

Q. Did you have your Thanksgiving turkey together? [343]

A. Yes, we did.

(Discussion between the Court and the witness.)

The Court: Call your next witness.

Mr. Hackley: If your Honor please, I want to recall Mr. Ruddle for a moment to identify the solution in this bottle here, if he can.

Mr. Ruddle.

ALLAN B. RUDDLE,

recalled for the Plaintiffs; previously sworn.

Direct Examination

Mr. Hackley: Q. Mr. Ruddle, can you identify

(Testimony of Allan B. Ruddle.)

the bottle and its contents, Exhibit 40 for identification?

A. Yes; I made this solution about ten days ago.

Q. Put it in a bottle?

A. I put it in that bottle, yes, sir.

Q. What is the solution that you made?

A. Sodium silicate, which I got from Philadelphia Quartz, the aluminum sulphate, sodium fluosilicate I got from Braun-Knecht-Heimann. I took one gallon of water, and in it I put one ounce of aluminum sulphate, one ounce of sodium fluosilicate, and two gallons of sodium silicate, and made that solution.

Q. Did you stir it up?

A. Yes; I made it as I described. I stirred them all thoroughly as I put them in.

Q. And then put a sample of that in this bottle? [344]

A. That is right.

Q. What did you do with the bottle after you put the sample in it, this bottle here?

A. I took it to the Macauley Foundry.

Q. Who did you give it to?

A. Well, I mixed the sand and the asphalt emulsion. I got the asphalt emulsion from the American Bitumuls Company.

Q. You are referring to Plaintiffs' Exhibit 41, by any chance?

A. That is right.

Q. Exhibit 41 for identification?

A. That is right. I got it from Mr. Buckley at the American Bitumuls Company.

(Testimony of Allan B. Ruddie.)

Q. And you took the two of these to the Macauley?

A. Macauley Foundry, and there I mixed up——

Q. When?

A. I think it was last Tuesday, I think—a week ago last Tuesday.

Q. Did you use these products in any way after you took them to the Macauley Foundry?

A. No, that is all—did you mean did I make up the solution?

Q. Did you use it in any way out there?

A. Yes; I made up—they call it a batch of sand, and this solution, together, to make some cores.

Q. Who did you work with there at the foundry?

A. Otto Goth is the one I took it to, and he called in this boy who was here this morning, Tony Anaclerio.

Q. Tony Anaclerio? A. Yes.

Q. You refer to Otto Goth, who was on the witness stand, Tony Anaclerio, and yourself?

A. That is right. They worked on adjoining benches together, and he asked Tony to make these cores.

Q. You made the core sand yourself?

A. Yes, I mixed the core sand myself. [345]

Q. Tell me the formula you used to make the core sand.

A. I took 1750 cc's of sand and 80 cc's of this solution and 50 cc's of asphalt emulsion.

Q. Is that what you call a batch?

(Testimony of Allan B. Ruddie.)

A. That is what he called a batch, yes.

Q. What did you do then? How did you mix those up?

A. Mixed them by hand, ran them through a riddle three times.

Q. In what way did you mix them up? Give us the steps of that.

A. I put the sand on the bench, poured the solution in a hole through it, rubbed it in my hands, and then I put the asphalt emulsion in, rubbed it through my hands, and then put it through a riddle three times.

Q. The result was a core sand?

A. Yes, that is right.

Q. What did you do with that?

A. I turned it over to Otto Goth, and he in turn asked this boy, Tony, to make up some cores.

Q. Were any cores made up while you were there? A. Yes, they were.

Q. Are any of those cores the cores which are here today?

A. Yes, they are. I saw him put a mark on the one he made.

Q. Do you by any chance refer to the core Exhibit 39 for identification?

A. Yes, that is the one that has the mark on it.

Q. What mark do you observe on there that you recognize?

A. This "X", and then he put a little mark up here; I observed him mark it.

(Testimony of Allan B. Ruddle.)

Q. It looked like an inverted "V" or something of that kind? A. That is right.

Mr. Hackley: I offer in evidence as Plaintiffs' Exhibit 40 the solution identified by the witness.

Q. By the way, Mr. Ruddle, were you with Mr. Anaclerio this morning when he picked this solution, Exhibit No. 40, up and [346] brought it over here? A. Yes, I was.

Mr. Hackley: That is Plaintiffs' Exhibit 40, and the asphalt emulsion identified by the witness as Plaintiffs' Exhibit 41.

Mr. Aurich: I make the same objection, your Honor, and I assume they may be received subject to the same ruling of the Court and subject to a motion to strike.

The Court: Same ruling.

(The solution and asphalt heretofore marked Plaintiffs' Exhibits 40 and 41 for identification were received in evidence.)

The Court: Is that all from this witness?

Mr. Hackley: That is all from this witness.

The Court: Step down.

Mr. Hackley: Mr. Waller, please.

Mr. Aurich: This witness, as I started to tell your Honor, is extremely hard of hearing. He has an instrument which is pitched to a certain tone. Will you speak loud to him, Mr. Clerk.

ARTHUR C. WALLER,

called for the Plaintiffs; sworn.

The Clerk: Please state your full name to the Court. A. Arthur C. Waller.

Direct Examination

Mr. Hackley: Q. Where do you reside, Mr. Waller? A. Seattle.

Q. What is your home address?

A. 8258-15th Avenue, Northeast, Seattle, Washington. [347]

Q. How long have you lived there?

A. Since the end of October 1938.

Q. Continuously? A. I travel.

Q. Your residence——

A. But my home has always been there since that time.

Q. What area do you travel through primarily?

A. The State of Washington, Oregon, Panhandle, Wyoming, and British Columbia.

Q. What is your occupation?

A. I am a civil engineer with the asphalt department.

Q. What company?

A. Shell Oil Company.

Q. You work out of the Seattle office?

A. Yes, I do.

Q. That is your regular headquarters, is it?

A. Would you mind repeating?

Q. I say, is that your regular headquarters?

A. That is my regular headquarters.

Mr. Hackley: Your Honor, I have here a com-

(Testimony of Arthur C. Waller.)

plete deposition of this witness' testimony which was taken last week. The opportunity for cross examination was presented to counsel and was not taken advantage of. I have produced everything I want of this witness, which comprises 106 pages of testimony, in this form. The witness is a resident of Seattle. His office is in Seattle. He works out of the Seattle office of the company. For some reason not clear to me, the Shell Oil Company has seen fit to bring him into this jurisdiction without any notice or warning to me at all, after I have gone to the expense of this testimony, reducing it to writing, and now I assume, under your Honor's ruling yesterday, I would be compelled to go through the whole testimony all over again. I think it is an imposition on the Court. I think it is an imposition on the plaintiffs to proceed that way. I have examined [348] the rule, and I have attempted overnight to find any authorities as to whether or not Rule 26, subdivision (3) of section (d) is directed to the residence of the witness, normal residence of the witness, or the apparent chance whereabouts of the witness at the time of trial, and every reasonable interpretation appears that the rule is intended to apply to a witness normally residing away from and/or more than one hundred miles out of the jurisdiction of the court.

Therefore, in the interest of time and in every way, and to the convenience of this record, in settling this record completely, I would like to offer again the deposition of the witness on the stand,

(Testimony of Arthur C. Waller.)

Mr. Arthur C. Waller, and ask that it be received, and it will be read into the record. Then I have no objection if he does want to recall Mr. Waller during their case or examine him during our case, cross examine him during our case, to that being done. I submit in fairness, equity and the meaning of the rule we should be able to present this deposition in this manner.

Mr. Aurich: I make the same objection, of course, under the rule, that I made before. I do not desire to enter into any extended argument about the equities or the good faith of the parties here unless your Honor wishes to hear from me on that matter.

The Court: Is there any objection to this going in?

Mr. Aurich: Yes, your Honor.

The Court: What is it?

Mr. Aurich: The objection is that it is full of irrelevant matters and hearsay. Counsel and the witness indulged in argument such as, What would happen if you dropped an egg on Market Street; could you pick it up?—matters that would never be [349] received by the Court.

The Court: Subject to your legal objections with relation to the hearsay testimony?

Mr. Aurich: Yes, your Honor. I think it has other objections. I had intended to call this witness as my own witness. I intended to examine him according to the story that I understand he

(Testimony of Arthur C. Waller.)

can tell. That will be merely a duplication of what he will say here in substance. But I certainly am entitled, I believe, to present my evidence in my own way, and I can't be prevented in that by any action of these plaintiffs.

Mr. Hackley: I do not intend to do that.

Mr. Aurich: I did not interrupt you, Mr. Hackley.

Mr. Hackley: I said I do not propose to prevent you, Mr. Aurich.

Mr. Aurich: What happened in this case was simply this, your Honor: The plaintiffs took numerous depositions of practically every witness I intended to call, and Mr. Hackley knew at the time he took those depositions that they were not admissible in evidence. As far as Mr. Waller was concerned, he knew when that deposition was concluded it was not going in evidence, because I made no attempt to cross examine the witness; I made no attempt to object to the questions, as to the form, or anything of that sort. For example, I mention the long argument that they indulged in. It goes into pages. Now, under the rule, if that deposition is offered in evidence, I am precluded from asserting those objections.

The Court: Suppose it goes in subject to all the legal objections you wish to make?

Mr. Aurich: Pardon me?

The Court: Suppose you allow it to go in the interest of [350] time subject to your legal objections that you have indicated.

(Testimony of Arthur C. Waller.)

Mr. Aurich: Objection as to form as well as to substance?

The Court: Yes.

Mr. Aurich: I will have no objection, provided I am not precluded from calling Mr. Waller as my own witness. I have no objection to that.

The Court: Under those circumstances, it may go in.

Mr. Hackley: Did you wish to examine the witness now for any reason on the deposition? I do not presume so, but I do not want to deny you that opportunity.

Mr. Aurich: I do not know what the status is.

Mr. Hackley: Mr. Aurich is correct. He is entitled to have any objections to this testimony heard.

The Court: Let it go in subject to your motion to strike and over the objection of counsel.

Mr. Hackley: I propose to read the deposition into evidence, and you can advance your objections as it is read.

The Court: I think we can save a lot of time if we allow it to go in subject to all legal objections.

Mr. Aurich: Your Honor, I desire to offer Mr. Waller's deposition that way, but I certainly have no desire to sit here and have your Honor listen to the reading of this testimony.

Mr. Hackley: That is perfectly satisfactory to me, your Honor. What was the exhibit number?

The Clerk: Plaintiffs' Exhibit 37 for identification.

(Testimony of Arthur C. Waller.)

Mr. Hackley: I will offer the deposition of the witness Waller as Plaintiffs' Exhibit 37.

The Court: It may go in subject to the legal objections advanced by counsel, and over his objections. It is going in subject to a motion to strike. [351]

(The deposition heretofore marked Plaintiffs' Exhibit No. 37 for identification was received in evidence.)

(Plaintiffs' Exhibit No. 37, the Deposition of Arthur C. Waller, is set out at page 913 of this printed record.)

Mr. Hackley: And I will offer the exhibits annexed to the deposition in sequence; I will offer them separately so you may be heard, Mr. Aurich.

Mr. Aurich: I do want to be heard on these, your Honor.

Mr. Hackley: The first of these exhibits is Waller Exhibit No. 1 to the deposition, comprising a set of longhand notes identified by the witness. I wanted to know if any objection was made at the time of the offer.

Mr. Aurich: I understand these are all subject to whatever objection I may have, Mr. Hackley, either then or now.

Mr. Hackley: Yes.

Mr. Aurich: I have no objection to that exhibit, the next one in order.

Mr. Hackley: Then I will offer as Plaintiffs'

(Testimony of Arthur C. Waller.)

Exhibit 45 the notes of the witness Waller appearing as Exhibit 1 to the deposition of the witness.

(The notes referred to were marked Plaintiffs' Exhibit No. 45 in evidence.)

Mr. Hackley: I understand you have no objection to Waller Exhibit 2, Mr. Aurich?

Mr. Aurich: That is correct.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 46 the notes of the witness Waller identified by him during the taking of his deposition as Exhibit 2 to that deposition.

(The notes referred to were marked Plaintiffs' Exhibit No. 46 in evidence.)

Mr. Hackley: Mr. Aurich, during the taking of Mr. Waller's deposition there was a demand made upon you for some documents [352] in a file which Mr. Waller left in Washington, at Seattle, and you stated at the time of the deposition that you would produce those documents—at least would locate them, examine them, and let me examine them if you felt they were proper, or something of that sort. I can read the record on it.

Mr. Aurich: We are wasting a terrific lot of time over nothing. You asked me to produce Mr. Waller's file. I told you I would. I produced it a week ago today and your office was advised that the file was in my office here in San Francisco for your inspection at any time you want, and it is there right now.

Mr. Hackley: I have no information on that

(Testimony of Arthur C. Waller.)

fact at all, although I have no doubt you may have notified my office. If you say you did, you did.

Then I offer for identification as Plaintiffs' Exhibits 47, 47-A, 47-B and 47-C respectively the memoranda which are annexed to the Waller deposition as Exhibits 4, 4-A, 4-B and 4-C.

Mr. Aurich: I understand that is only for the purpose of identification?

Mr. Hackley: For identification.

(The memoranda referred to were marked Plaintiffs' Exhibits 47, 47-A, 47-B and 47-C for identification.)

Mr. Hackley: Mr. Spotswood, please.

EARL HENRY SPOTSWOOD,

called for the Plaintiffs; sworn.

The Clerk: Please state your full name to the Court.

A. Earl Henry Spotswood.

Mr. Aurich: I might say to the Court, this is another witness I propose to call on behalf of the defendants. [353]

Direct Examination

Mr. Hackley: Q. State your full name, age and residence address, please.

A. Earl Henry Spotswood, twenty-nine, 311 Ramona Avenue, El Cerrito, California.

Q. By whom are you employed?

A. Shell Oil Company.

(Testimony of Earl Henry Spotswood.)

Q. How long have you worked for Shell Oil Company?

A. Approximately five years.

Q. When did you go to work for them, do you remember? A. September 1936.

Q. What was your occupation, or how were you engaged before that?

A. Before that I was employed by a private individual as an inspector at a paving plant.

Q. For how long?

A. For approximately six months.

Q. And before that where were you?

A. I attended college.

Q. What school?

A. University of California.

Q. Did you graduate there? A. Yes.

Q. What degrees? A. B. S.

Q. What were the particular majors that you had at California?

A. Mechanical engineering.

Q. What plant of Shell Oil Company are you located at? In Martinez?

A. I am sorry; I didn't catch that question.

Q. I say, are you located at the Martinez plant of Shell? A. Yes.

Q. Are you acquainted with Allan B. Ruddle, one of the plaintiffs in this action?

A. I am.

Q. How long have you known Mr. Ruddle?

A. Oh, for about four years.

(Testimony of Earl Henry Spotswood.)

Q. What was the occasion on which you first met Mr. Ruddle, do you remember?

A. Yes, I recall meeting Mr. Ruddle at the Martinez refinery. [354]

Q. The Shell plant at Martinez?

A. That is right.

Q. Did you ever meet him before that?

A. I don't recall meeting him before that.

Q. What was the occasion of your meeting Mr. Ruddle, do you recall?

A. In connection with this core oil product.

Q. Was he just sent up to you at Martinez by somebody else in the company, or what were the circumstances?

A. I don't recall exactly. I believe he came up with some other representatives of the company and visited me at the laboratory.

Q. Do you remember who the other men of the company were? A. No, I don't.

Q. Would it have been Mr. McSwain, do you remember?

A. I don't recall whether it was Mr. McSwain or not.

Q. When you first went to work for Shell Company in what division were you working?

A. I was employed in a motor laboratory.

Q. For how long?

A. Oh, about four months.

Q. Doing what?

A. Testing lubricants and greases and so forth.

Q. This was up at Martinez too? A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Then where did you go, or what did you do?

A. Then I was transferred to asphalt research, at the same plant.

Q. About what date would you fix as the time when you went to the asphalt research division of Shell?

A. Roughly it was around the first of the year 1937.

Q. Now, what would you fix as the approximate date when you first met Mr. Ruddle?

A. To the best of my recollection it was in the first part of the year 1938.

Q. Were you still in the asphalt research division at that time? [355]

A. I was.

Q. Who were your immediate superiors in that department?

A. You mean at that time?

Q. Yes.

A. Mr. L. J. Schneider was my superior at that time.

Q. Did you have anyone else working in the department with you, or was it just yourself and Mr. Schneider?

A. No, there were other people in the department.

Q. When you met Mr. Ruddle were you given any instructions by anyone in the company as to what to do in connection with Mr. Ruddle, to work with him or anything of that sort?

A. I don't recall any specific instructions.

Q. Did you get any written instructions from anyone in the company?

(Testimony of Earl Henry Spotswood.)

A. I don't recall any.

Q. What did you do then with Mr. Ruddle, can you recall, in connection with this core oil work that you speak of?

A. You mean at this first meeting?

Q. Yes.

A. Mr. Ruddle discussed the subject of core oils with me, and during the conversation he pointed out that he had a material, a so-called special solution, which when mixed with asphalt emulsion and mixed with sand would make a satisfactory core-binding material. He stated at that time that this material was satisfactory in all respects except that occasionally on baking the cores, they had a tendency to show soft spots, uneven soft [356] spots which made them unsatisfactory for use.

Q. This was at the first meeting you had?

A. That is right.

Q. What did you mean when you said "so-called special solution"?

A. Mr. Ruddle intimated to us that he had this special solution which he had either invented or ran across, and this material, when mixed with asphalt emulsion, would work as a core binder.

Mr. Hackley: I move to strike that part of the witness' testimony where he said "intimated," your Honor, and ask the witness to refer only to what either Mr. Ruddle said to him or he said to Mr. Ruddle.

The Court: The question and answer will stand. Proceed.

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: Q. What did Mr. Ruddie say to you about his core oil? Did he tell you anything about it at that time?

A. Only what I have already testified to.

Q. Did he tell you anything about how to make it, the core oil?

A. I don't recall whether he told me how to use it at that time or not.

Q. What else took place at this first meeting with Mr. Ruddie?

A. That is all I recall at that meeting.

Q. Now, you said "he intimated to us." Whom do you mean by "us"?

A. Myself.

Q. Anyone else?

A. I don't know whether there were any other persons there or not.

Q. Do you use the word "us," then, in the editorial sense, as meaning yourself?

A. Meaning myself.

Q. Or you and the company, perhaps?

A. Possibly.

The Court: Or maybe also Mr. Ruddie.

Mr. Hackley: Mr. Ruddie could hardly intimate something to himself.

The Court: Two were present. [357]

Mr. Hackley: Yes, but he is referring to what "Mr. Ruddie intimated"—were his words—"to us," and I am trying to find out who "us" was.

The Court: Proceed.

Mr. Hackley: Q. Mr. Spotswood, did you do

(Testimony of Earl Henry Spotswood.)

anything after Mr. Ruddle left, or while he was there, relating to this core oil of Mr. Ruddle's, make any tests, make any investigations, do anything at all?

A. I don't recall doing any work during the first meeting.

Q. Did you get any instructions from any of your superiors as to how to work with Mr. Ruddle or what to do?

A. No, I don't recall any instructions.

Q. What did you do?

A. We just talked and that was all.

Q. And Mr. Ruddle left and you didn't know whether you would ever see him again, is that it?

A. That is right.

Q. Did you ever see him again?

A. Yes, I saw him again.

Q. How long after the first meeting?

A. I don't recall—yes, I do; I do recall meeting Ruddle again at a later date. I believe it was the following month, February.

Q. About how long elapsed between the two meetings?

A. Well, Ruddle visited the refinery sometime in January, and I met him again in February.

Q. Well, was there just a few days between the meetings, or several weeks, or what?

A. I don't recall whether there was several days or several weeks.

Q. And did the subject of this Ruddle core oil

(Testimony of Earl Henry Spotswood.)

come to your attention at any time between Mr. Ruddle's first and second visits to you?

A. I don't understand that question.

Q. Well, I will repeat it this way: If I understand your testimony, you met Mr. Ruddle in January of 1938 and again in [358] February of 1938. You can't fix the time of either one of those meetings, is that correct?

A. Not definitely.

Q. Except to put them in those months?

A. That is right.

Q. You don't know definitely how far apart those two meetings were?

A. No, I can't fix them definitely.

Q. Now, the point I want to find out is: Did you do anything with regard to Ruddle's core oil at all between the time you first met him in January—Mr. Ruddle—and the time you met Mr. Ruddle again in February?

A. I don't know whether I did or not.

Q. Have you any recollection on that at all?

A. Possibly my notebooks might help to fix some of that data.

Q. I would like to get just what your general recollection is, or as much of your recollection as you have, before we refresh it with notes. You have no independent recollection of anything transpiring relating to Ruddle's core oil between those two meetings, is that correct?

A. I do recall having done some work on some

(Testimony of Earl Henry Spotswood.)

sand in February. I don't know whether that was prior to this later meeting with Ruddle or not.

Q. What was this work relating to sand? Was that in any way connected with Ruddle's core oil? A. It had to do with core oil.

Q. What was the nature of that work?

A. I just ran an analysis on a sample of sand.

Q. Under whose direction or whose instruction?

A. I don't recall whose instructions they were.

Q. No recollection at all? A. No.

Q. Where did you get the sand?

A. I don't recall where I got the sand. I believe it was from the Macauley Foundry.

Q. Did you go down there and get it?

A. I don't recall. [359]

Q. Did you go down there and get it?

A. I don't recall whether I personally obtained it or whether it was given to me by other people.

Q. It might have been either?

A. It might have been.

Q. Did you ever go to the Macauley Foundry, do you remember? A. Yes.

Q. After the second occasion of your meeting with Mr. Ruddle? A. I don't recall—

Mr. Aurich: I object to that, if your Honor please. The witness has only named one occasion when he met Mr. Ruddle.

Mr. Hackley: No, he said he met him in January and he met him in February, unless I sorely misunderstood him.

(Testimony of Earl Henry Spotswood.)

Mr. Aurich: It might very well be this meeting at Macauley's is the second occasion he refers to.

The Witness: That is exactly right.

Mr. Hackley: Q. With that statement of counsel you remember your second meeting with Mr. Ruddle was at the Macauley Foundry?

A. I was going to state that that was so prior to the interruption.

Q. Who else was present at this Macauley Foundry?

A. I don't recall who was present, except I remember Mr. Ruddle was there.

Q. You can't remember anyone else?

A. No, I don't.

Q. Did you meet any of the Macauley people there? A. Yes.

Q. Whom did you meet?

A. I met a coremaker.

Q. Do you remember his name?

A. Otto something-or-other.

Q. What did he look like?

A. He was a tall man, heavy-set.

Q. Do you remember his last name?

A. No, I don't.

Q. Would you know it if you heard it, do you think? [360] A. Possibly.

Q. Otto Goth? A. It sounds familiar.

Q. He was a coremaker at Macauley's at the time? A. That is right.

Q. Tell us just what took place at the Ma-

(Testimony of Earl Henry Spotswood.)

cauley Foundry when you visited—This, I understand, was in February 1938?

A. Yes. We went into the foundry, Mr. Ruddle and myself and possibly other people that might have been there that I don't recall, and we went to the back of the foundry, and I recall Mr. Ruddle introduced me to Mr. Goth, and then Mr. Ruddle had Mr. Goth prepare some core sand using the so-called core oil that Mr. Ruddle had and which he gave to Mr. Goth, and a mixture was prepared and cores were molded and baked, and after the cores were baked they were examined and they were found to have soft spots in them. And I recall Mr. Ruddle remarking that that is substantially what he had been telling me that previous time that I had met him.

Q. About soft spots in the cores?

A. That is right.

Q. Do you remember what the condition of the ovens were at the time of the baking of these cores, whether the fires were on or off?

A. They were on.

Q. You don't remember now whether any other representative of your company was there at the time you met at Macauley's? A. No, I don't.

Q. Did you, at the time you met Mr. Ruddle at Martinez on the first occasion in January, receive any statements or information from him relating to what his core oil was, what was in it?

A. Only so far as stating that he had this secret

(Testimony of Earl Henry Spotswood.)

solution, and when mixed with asphalt emulsion it could be used as a core oil. [361]

Q. Was this secret solution the same as the special solution you talked about a moment ago?

A. Yes.

Q. Did he tell you anything about the formula for the making of a core sand from his core oil at the time of your first meeting?

A. I don't recall whether he did or not at that first meeting.

Q. Did he at the Macauley Foundry on the second meeting?

A. I don't recall whether he did at that time either.

Q. When do you first recall, if at all, receiving any statements or information from Mr. Ruddie about the proportions or formula for making a core sand from his core oil?

A. I do recall that he gave me a formula which he considered to be an optimum formula, but I don't recall when he gave it to me.

Q. Now, you testified, Mr. Spotswood, that you kept notes, do I understand, of your work on Core-Min-Oil?

A. That is correct.

Q. Were those fairly complete notes?

A. Fairly complete, yes.

Q. Are those the notes which you presented in the course of the taking of your deposition earlier in this case, oh, about a year ago or less?

A. That is right. [362]

(Testimony of Earl Henry Spotswood.)

Q. Before I take up the notes themselves, can you remember now what the formula for a riddle core sand was that Mr. Ruddle gave to you? This is during those early stages sometime, I understand.

A. I recall that a formula was given, and there is a formula written in my book, but I wouldn't try to remember what it was without reference to my notes.

Q. About what was the date when Mr. Ruddle first gave you the formula of his core product—or the formula for making a core sand out of his core oil?

A. What was the date?

Q. Yes.

A. I don't know what the date was.

Q. What was it approximately, can you remember?

A. No, I can't remember approximately.

Q. Well, can you remember to a year?

A. It was the year 1938.

Q. Was it in the first part of the year or last part of the year?

A. Probably the first part of the year.

Q. Can you tie it down a little closer? Can you put it in a month, any particular month?

A. No, I can't. My books probably have a date marked next to the formula.

Q. I know, but I am trying to find what your recollection is, if you have any on the subject at all.

A. I don't recall.

Q. You can't fix that date at all?

A. No.

(Testimony of Earl Henry Spotswood.)

Q. I am going to show you a notebook which has been handed to me by your counsel, and ask if this is one of the sets of notes you referred to.

A. Yes, this is one of the books. [363]

Mr. Hackley: Q. Was that kept by you in your own handwriting, that whole notebook, so far as you recall?

A. Yes, it is.

Q. There may be some notes by someone else, but substantially it is your own?

A. Substantially it is mine.

Q. I notice that you have a large number of pages of this notebook sealed up with tape and the like. What is the reason for that?

A. That contains work other than core oil.

Q. Is it your testimony that every page in this notebook marked your notebook No. 1, March 1937, on which any reference to core oil is found is unsealed and open for inspection?

A. Yes, it is.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 48 that part of the notebook No. 1 identified by the witness which is directed to the subject of core oil and which the witness has identified as being those pages which are unsealed; is that correct, Mr. Spotswood?

The Witness: That is right.

Mr. Hackley: For the record, we will note that the offer includes the cover, the two inside cover face sheets of the notebook, on one of which appears: "E. H. Spotswood Research Laboratory Data—Start March 24, 1937," and the following

(Testimony of Earl Henry Spotswood.)

pages of the book itself by their numbers: 94, 95, 121.

(The portions of the notebook referred to were marked [364] Plaintiffs' Exhibit No. 48 in evidence.)

Mr. Aurich: We will be glad to have the seals of the remaining pages removed at any time, if you wish.

Mr. Hackley: I have accepted your word up to now on the fact that everything is revealed, and I am perfectly willing to continue to do so.

For convenience of reference I would like to offer as Exhibit 48-A photostatic copies of the same sheets which comprise the offer Exhibit 48. Since there are only some five sheets out of an entire 120-odd in the notebook, I think it may be more convenient for the Court in later reference to this to have it in this photostatic form.

The Court: They may be admitted.

The Clerk: 48-A.

(The photostats referred to were marked Plaintiffs' Exhibit No. 48-A in evidence.)

Mr. Hackley: Q. I show you another notebook marked "E. H. Spotswood, II." What is this notebook? Another one of yours? A. Yes.

Q. Is this a continuation of the notes started in your first notebook? A. It is.

Q. These notebooks of yours were kept serially; when you finished one you started another, is that correct? A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Or substantially so?

A. Substantially so.

Q. Could there be some overlapping, perhaps, between the two books?

A. Yes, there is some overlapping.

Q. But it is intended to be a series?

A. It is.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 49 the following parts of the second of the note-books identified by the witness, namely, the cover sheet or cover, marked "E. H. [365] Spotswood, II, April 1938," the inside face covers, directly inside the cover and opposite, and on the top of the latter his notes start with "G. A. Frankel, W. H. Spiri," and so forth, the inside cover of the face sheet and the following pages of the book itself: pages numbered 1 to 80 inclusive, pages 85 to 152 inclusive, and the rear cover face sheet, both sides, as well as the inside of the rear cover.

The Court: Let them go in.

Mr. Hackley: All right.

I offer them as Exhibit 49-A photostatic copies of all of the sheets comprising the offer Exhibit 49.

(The photostats referred to were marked Plaintiffs' Exhibit No. 49 in evidence.)

Mr. Hackley: Mr. Aurich, will you make the same statement with regard to the sealed pages of Exhibit 49 as you made to Exhibit 48? [366]

Mr. Aurich: What is that?

Mr. Hackley: Namely, that they have been

(Testimony of Earl Henry Spotswood.)

sealed because they do not contain this core oil data?

Mr. Aurich: That is true of the three books, Mr. Hackley, and they are ready to be opened for your inspection at any time.

Mr. Hackley: Q. This third book is your third book in order? A. It is.

Q. And your Roman numeral No. III so indicates, on the cover? A. That is right.

Mr. Hackley: I will offer from that notebook all of the pages therein on which any reference to core oil is made, as Exhibit 50, and as Exhibit 50-A I will offer photostatic copies of the sheets in that notebook which are included in the offer Exhibit 50.

(The portions of notebook referred to were marked Plaintiffs' Exhibit No. 50, and the photostatic copies thereof were marked Plaintiffs' Exhibit No. 50-A in evidence.)

Mr. Hackley: Q. Mr. Spotswood, do you prefer to look at your original notes, or do you want to look at these photostats?

A. I prefer the original notes.

Q. All right, I will hand you those original notes. You stated that you had a note of the original formula which was given to you by Mr. Ruddle for the making of core sand. Is that in this first notebook? A. It is.

Q. Will you locate it and read it to the Court, please, giving the date and all the rest, with reference to it.

(Testimony of Earl Henry Spotswood.)

A. There is no date on this particular page, but there is a date on the opposite page of February 8, 1938. There is a notation "Formula used by Mr. Ruddle 1750 cc's of sand, 125 [367] cc's of solution, 40 cc's of Y-104," and in parentheses is "60 cc's of water."

Q. What is Y-104? A. Asphalt emulsion.

Q. What is that solution referred to? Is that the special solution of Mr. Ruddle that you referred to a moment ago? A. That is.

Q. Will you also read the drying temperatures that are noted there?

A. "Drying temperatures: 450 to 600 degrees Fahrenheit."

Q. You will note that the caption of that formula which appears at page 95 of Exhibit 48 is entitled "Formula used by Mr. Ruddle." Where did Mr. Ruddle use that formula?

A. I don't know where he used that formula.

Q. Is that what that word "used" means, that he used it someplace, or is this what he gave to you?

A. It is the formula that he gave to me, and apparently had been used by him.

Q. Did you ever use that formula yourself for making cores? A. I did.

Q. Where?

A. I believe in one of my reports there is the experiment showing this formula having been used.

Q. What do you refer to as your reports?

(Testimony of Earl Henry Spotswood.)

A. A series of reports written by myself on this subject.

Q. Are those the reports that are known as the TAC reports? A. That is right. [368]

Q. Did you do any work at the Vulcan Foundry in Oakland in connection with Core-Min-Oil?

A. I did.

Q. About what was the period of that work?

A. That work began on May 5th.

Q. Of what year? A. 1938.

Q. How do you know that date so definitely?

A. I recall it having been written in my notebook.

Q. You checked your notebook for the date, did you? A. I did.

Q. How long did you continue to work at the Vulcan Foundry on Core-Min-Oil?

A. Until I ceased working on the subject.

Q. Outside of the one visit that you made to the Macauley plant some time in February, 1938, did you make any other foundry visits prior to May 5, 1938? A. No, I don't believe I did.

Q. Did you go out to the Vulcan Foundry at all before that, do you remember?

A. Yes, I do recall one visit to the Vulcan Foundry prior to May 5th.

Q. Do you remember about when that was?

A. It was April 26th.

Q. Whom did you go with?

A. I think I went alone.

Q. What was the purpose?

(Testimony of Earl Henry Spotswood.)

A. I don't recall the purpose of the visit.

Q. Do you remember anything about the visit other than that you did go there?

A. I recall having gone, but I don't recall just what I did at the foundry at that time. [369]

Q. Was the work that you did starting on May 5, 1938, and on through the months following, at the Vulcan Foundry, all set out in one of your notebooks that you have offered here with your testimony? A. Substantially all of it, yes.

Q. What is omitted?

A. From time to time observations were made which were not noted down in the books.

Q. Other than those observations, the notes are complete and would speak for themselves as to what you did? A. Yes, they would.

Q. You identified a formula which was given to you by Mr. Ruddle. I think you fixed the date as being about February 8, 1938, according to your first notebook, Exhibit 48, is that correct?

A. That is right.

Q. Did Mr. Ruddle ever give you any other formulas for Core-Min-Oil other than the one in your notebook, as you recall?

A. I don't recall whether he did or not.

Q. He might have?

A. He might have.

Q. But there was a wide variation in the formula experimented with by yourself, wasn't there?

A. Yes, a wide variation.

(Testimony of Earl Henry Spotswood.)

Q. What was the general nature of those variations? Can you describe them briefly?

A. Yes; I experimented with all ratios of Ruddle Solution—so-called Ruddle Solution—and sand, and asphalt emulsion, in order to determine various properties.

Q. Did you settle on any one of these as a best formula? A. No, I did not.

Q. Did any one of these formulas appear to you to be better than the others?

A. Yes; some of them appeared to be better than others.

Q. Which ones were those, and refer to any notes that you have, if you like, to give us that information?

A. Throughout my [370] notebooks there is a formula which appears, which consists of 93 per cent sand, $4\frac{1}{2}$ per cent either Ruddle Solution or sodium silicate, and $2\frac{1}{2}$ per cent asphalt emulsion.

Q. 2.5 asphalt emulsion?

A. Yes. And this formula appears in a number of places in my notes, and is one of the ones which gave the best result.

Q. For example, that appears on the 10th page of your second notebook, Exhibit 49, does it not?

A. It does.

Q. Had you ever had any experience in core-making before you did the work in this particular task of Core-Min-Oil?

A. No, I never had.

(Testimony of Earl Henry Spotswood.)

Q. Had you ever been in a foundry?

A. Yes, I was in a foundry once.

Q. Not as a workman, I take it?

A. No; as an observer.

Q. Under what circumstances, and when?

A. I believe it was in connection with my studies.

Q. When you were in college?

A. During school.

Q. Did you learn anything at that time about core-making, other than what you might casually observe?

A. Substantially nothing.

Q. Do you recall the tests which were performed by you when it was determined that the carbon dioxide generated by the flames in a direct fire oven served to soften the surface of cores made with the Ruddle product?

A. I do.

Q. When did you perform those tests? Were those all before the report, Exhibit 3, that is, your TAC Report No. 79? You can refer to your reports. I think you have a set there, haven't you?

A. The work that you have referred to was the basis of the TAC reports.

Q. What is the date of that report?

A. February 24, 1938.

Q. At that date you had made your determination or discovery, [371] whatever it was, that it was the gases of combustion that were doing the damage, is that right?

A. That is correct.

Q. And so reported to your superiors?

A. That is right.

(Testimony of Earl Henry Spotswood.)

Q. And as a consequence of that, the Report TAC 79 was prepared, is that correct?

A. That is right.

Q. Did you ever make any tests of Core-Min-Oil cores baked in electric ovens?

A. Yes, I did.

Q. What kind of formula did you use for the Core-Min-Oil in those cores, the ones that you read a moment ago, consisting of 93 percent sand, 4.5 percent solution, and 2.5 percent asphalt emulsion?

A. The first actual experiment which I find in my TAC Report 79 on page 5, table 2, shows a core which was baked in the electric oven using 93.1 percent sand, 1.6 percent emulsion, and 5.3 percent Ruddell Solution.

Q. You made cores with that formula, and I take it from what you said, baked them in an electric oven?

A. That is correct.

Q. What kind of results did you get?

A. These cores were of even hardness.

Q. What do you mean by "hardness"?

A. I mean that they were uniformly hard over the whole surface.

Q. Solid in their surface texture?

A. That is right.

Q. Continue. What else did you note about them?

A. That is all I noted.

Q. Were any castings made with those cores?

A. No, they were not.

Q. Are you able to state from what you know,

(Testimony of Earl Henry Spotswood.)

from the studies you have made of core work on your work at the Vulcan Foundry, and in your observations at the Macauley Foundry, whether those were good, bad, or indifferent cores—anything like that? [372]

A. At the time the tests were made we didn't know whether they were good, bad, or indifferent. No tests were made to determine the various properties.

Q. Who do you mean by "we"; yourself?

A. Myself.

Q. You did not have any core experience at that time, and you would not know?

A. That is right.

The Court: Who had any core experience in this case? What is your thought of a good core?

Mr. Hackley: My personal thought?

The Court: Yes.

Mr. Hackley: I think it was defined by this witness who was on the stand this morning, or the two witnesses, I should say; I think they know a good core—a core which will have a good, hard surface, for the purpose of making a casting; be smooth, produce a smooth casting.

The Court: This electric furnace was not used in casting.

Mr. Hackley: Not a casting; a core, yes. He testified he made cores.

The Court: A core can't be tested until a casting is made.

Mr. Hackley: Not on these particular cores.

(Testimony of Earl Henry Spotswood.)

The Court: Why inject this electric process in here? What relation has it to the case or to the issues involved?

Mr. Hackley: It is just one of the types of furnace.

The Court: I can say to you, so you will understand it and know it clearly: It is the Court's thought it has no relation to the issues here involved, and will not be considered by this Court for any purpose.

Mr. Hackley: If it would be helpful to the Court, I will tell you what my theory was of it; if not, I won't waste the time of the Court. [373]

The Court: Don't waste the time of the Court.

Mr. Hackley: Q. Mr. Spotswood, how long did your tests continue on Core-Min-Oil cores, that is, cores made with the formula supplied by Mr. Ruddell and these variations of it that you have spoken of; where you varied the proportions?

A. I don't recall how long those experiments continued. I would have to check through my notebook and determine.

Q. Your notebooks do fix that time, do they?

A. I believe they do.

Q. And did you go to some other course of experiments in core oils after you stopped experimenting with the Ruddell formula?

A. Many different experiments were carried out.

Q. On other formulas?

(Testimony of Earl Henry Spotswood.)

A. On all types of formulas and all types of materials.

Q. Are all those reported in your notebook, or substantially all of them?

A. Substantially all of them are.

KENNETH A. WRIGHT,

Called for the Plaintiffs; sworn.

The Court: Q. Please state your full name to the Court.

A. Kenneth A. Wright. [374]

Direct Examination

Mr. Hackley: Q. State your full name, age, and residence address, please.

A. My full name is Kenneth Arling Wright, and my residence is 261 Montecito Avenue, Oakland, California.

Q. By whom are you employed?

A. I am employed by the Shell Development Company.

Q. At Emeryville? A. Yes.

Q. What is your capacity with the Shell Development Company?

A. I am a research chemist.

Q. How long have you been employed by them in that capacity?

A. I have been employed there in that capacity since July, 1938.

(Testimony of Kenneth A. Wright.)

Q. Prior to that what was your education and training, particularly with reference to your academic work?

A. I attended the University of Washington and received my Ph.D. degree in 1938.

Q. Did you take your degree in any particular subject?

A. I took my degree in chemistry and minored in physics.

Q. And went right from there to work in the Shell Oil Company?

A. That is correct.

Q. The Shell Development Company, pardon me; I made a mistake there. And have been working continuously with Shell Development ever since, I take it?

A. Yes, that is correct.

Q. What is the nature of your work with Shell Development Company, broadly? What type of work do you do?

A. Well, my first [375] work was in connection with the use of asphalt and research in it.

Q. Were you ever assigned to work with a product known as Core-Min-Oil?

A. Yes, I was.

Q. A so-called Ruddle product, or something of that sort?

A. I was assigned to prepare a stable mixture of water glass and asphalt emulsion, which, of course, is related to the Core-Min-Oil problems.

Q. By whom?

A. My immediate superior, A. P. Anderson.

Mr. Hackley: Q. Who is Mr. Anderson?

(Testimony of Kenneth A. Wright.)

A. Mr. Anderson was my immediate superior. He worked under Mr. Van Doormaal.

Q. And he, in turn, was under Dr. Tuemmler?

A. No.

Q. Wasn't there a Doctor Tuemmler over there at the Shell Development Company?

A. Yes; he is in charge of the analytical department.

Q. You come under Doctor Tuemmler, do you?

A. No, I do not.

Q. Will you tell us what you did, broadly, with reference to work, in attempting to make a stable, I believe you said, a stable emulsion?

A. A stable mixture——

Q. Mixture of Core-Min-Oil?

A. Will you repeat that question, please?

Q. You defined, a moment ago, that you had been instructed to try to prepare a stable mixture of two products. I don't remember what you said in that connection. I want you to describe that and fix it as to time.

A. I attempted to produce a stable mixture of water glass, or sodium silicate solution, and asphalt emulsion, and that occupied my time from the beginning of my work [376] at Shell Development, which was in August, 1938, up to about June, 1939.

Q. What did you do after June, 1939, relating to this core oil business—anything?

A. Well, that essentially completed my work in that line.

Q. Did you keep any notes of your work in

(Testimony of Kenneth A. Wright.)

connection with your attempts to produce a stable mixture of asphalt emulsion and water glass, or sodium silicate?

A. I kept daily notes in my record books.

Q. I am not sure which you refer to as your record books. Are they these two notebooks which I show you?

A. Yes, that is right. I recognize them.

Q. These are both your own notebooks kept by you, are they, Doctor Wright? A. Yes.

Q. Will you just tell me which of these is the first of your two notebooks in point of time?

A. This is the book, No. 1.

Q. And this book has throughout it notes relating to your work in connection with this core oil? A. Yes.

Q. There are other things mentioned in this notebook, are there not? A. Yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 51 those parts of the notebook of the witness identified by the witness as his Lab. Notebook No. 1, as directed to the subject of core oil.

I understand, Mr. Aurich, there are other things in this book which we are not offering.

And I offer as Plaintiffs' Exhibit 51-A those same parts included in Exhibit 51 comprising photostat copies of the notes of the witness, which are the parts which I include in the offer of Exhibit 51. In other words, the photostats are a segregation of the notebook, photostatic reproductions. [377]

(Testimony of Kenneth A. Wright.)

(The portion of the notebook referred to were marked Plaintiffs' Exhibit No. 51 in evidence.)

(The photostatic copies of portions of the notebook were marked Plaintiffs' Exhibit No. 51-A in evidence.)

The Court: For the purpose of the record, what is the purpose of the offer?

Mr. Hackley: The offer of the last part?

The Court: All of the notes of this witness on the stand.

Mr. Hackley: They define precisely what the Shell Oil Company was doing during the period when they are supposed to be marketing Core-Min-Oil, and show that the Shell Oil Company, as far as this witness was concerned—I am eliminating all others—was not performing the terms of that contract in making any effort to sell this product, but were experimenting with other products, trying to find some way of producing a core oil without utilization of the precise disclosures of my client, and thereby getting around the contract, and as the evidence will bring out, they succeeded in just that, developing another product using asphalt and another medium with it, for the purpose for which Core-Min-Oil was designed, and then after finding that, and after having held Core-Min-Oil off the market, terminated this contract so they could sell their product without paying a royalty to Peck and Ruddie as the contract provided. These notes, without taking the time to read them now, all build

(Testimony of Kenneth A. Wright.)

up that picture step by step and page by page. I might say the deposition of this witness was taken earlier in the case for the purpose of isolating those facts, and that was accomplished.

Mr. Aurich: The only point I want to point out to your Honor—I do not know whether your Honor cares to have me argue the objection or not—but this book is not quite a book that can be [378] understood by anybody, and it is not self-evident from this book what this witness was doing. This book, taken alone, would be absolutely meaningless to anybody other than a highly-skilled, trained chemist.

The Court: That was the purpose of my inquiry.

Mr. Aurich: Yes, your Honor.

The Court: I can say to you, as well as to your opponent, at this time they do not mean anything to me, and for the purpose of this case I just want to call his attention and indicate to him we are wasting a lot of time without accomplishing anything.

Proceed.

Mr. Hackley: Q. You have identified a second notebook there, have you, Doctor Wright, as the balance of your notes on the subject of core oil?

A. Yes.

Mr. Hackley: I offer as Exhibit 52 the last set of notes identified by the witness, in so far as that notebook contains core oil references, and to identify what I mean by that, I offer as Exhibit 52-A photostatic copies of those parts of Exhibit 52 to which we will address ourselves in this case.

(Testimony of Kenneth A. Wright.)

(The portions of the notebook referred to were marked Plaintiffs' Exhibit No. 52 in evidence.)

(The photostatic copies of the portions of the notebook were marked Plaintiffs' Exhibit No. 52-A in evidence.)

Mr. Hackley: Q. Did you prepare any reports relating to your work in connection with the Core-Min-Oil subject, or the core oil subject, I should say? A. Yes, I did.

Mr. Aurich: I will stipulate, Mr. Hackley, the two documents you have in your hand were prepared by the witness.

Mr. Hackley: And that I may offer them without further identification? [379]

Mr. Aurich: Certainly.

Mr. Hackley: Q. The notebooks are yours, are they, Doctor Wright?

A. The reports, you mean?

Q. Yes; the reports.

A. Yes, they are mine.

Mr. Hackley: I offer as Plaintiffs' Exhibit 53, the first of the reports of the witness, dated January 10, 1939, entitled, "Methods of Producing Stable Bituminous Dispersions in Water Glass Solutions of High Concentration," and the second, dated August 25, 1939, entitled, "Core Oil Mixtures," as Plaintiffs' Exhibit 54.

(The reports referred to were marked Plain-

(Testimony of Kenneth A. Wright.)

tiffs' Exhibits Nos. 53 and 54, respectively, in evidence.)

Mr. Hackley: Q. Doctor Wright, you have spoken of a water glass solution. What was that water glass solution that you worked with?

A. A solution of sodium silicate and water.

Q. Were there any other chemicals mixed with the sodium silicate, such as sodium fluosilicate or aluminum sulphate?

A. Not put in directly; there may have been impurities, which I do not know.

Q. And you made no determination of those and did not add them to the work?

A. No, I did not.

Q. Were you successful in developing the product you set out to make, that is, a stable mixture of asphalt emulsion and sodium silicate, water glass?

A. I felt that I was successful to a considerable degree.

Q. Just what do you mean by that?

A. I mean by that I could prepare mixtures which would remain homogenous; that is, they would not separate; and which would stand a considerable length of time without any appreciable degree of separation.

Q. I show you your testimony given in the deposition. You recall you gave a deposition in this case?

A. Yes. [380]

Q. On February 21, 1941, and again on Febru-

(Testimony of Kenneth A. Wright.)

ary 27, 1941. And I call your attention to the fact there that you testified at page 11, lines 15 and 16, with reference to this product, and I will show you the record so you can identify it:

“Q. Were you successful in developing that product?

“A. Finally we were successful.”

There referring to this product of water glass and asphalt emulsion. A. Yes.

Q. That was your testimony, was it not?

A. That is correct.

Q. Is the successful test that you refer to in your last testimony set forth in your notebooks? And I think I may save your time by calling your attention to the fact that I so understood your testimony at the time of your deposition. You testified there as follows, and I will show you the record so that you can follow it:

Mr. Aurich: Mr. Hackley, why don't you ask him the question now, instead of reading into the record his deposition at a prior time, which is not admissible?

Mr. Hackley: Mr. Aurich, I am not interested in a deposition of this witness——

The Court: You are not entitled to the record unless there is a conflict in his testimony.

Mr. Hackley: Q. I will ask you, Doctor Wright, if your notes do show the results of those tests that were just referred to?

(Testimony of Kenneth A. Wright.)

A. I indicated in my notes mixtures which at the time I considered quite stable.

Q. Do you remember where that was in your notes?

A. As I recall, I believe they refer to the Z series, Experimental Mixtures, and not prepared on a large scale. They were, as I [381] remember, in the early part of the second book.

The Court: Regardless of where they are, the witness is here. Ask him directly what the situation is. Depositions have no place here unless there is a contradiction or conflict in the evidence.

Mr. Hackley: Q. Doctor Wright, is this your second notebook that you refer to?

A. Yes, it is.

Q. Will you call attention, for the record, to what part of the second notebook these notes are contained in? The page of your notebook would be enough for this record.

A. I have indicated on page 3 some mixtures that I consider quite stable.

Mr. Hackley: Q. What is the date of the entry?

A. The date is December 23, 1938.

Q. After you had concluded your work that you have indicated on preparation of stable emulsion, a stable solution of asphalt emulsion and water glass, what was your next assignment relating to core oils with the Shell Development Company?

A. Our next assignment was to adapt these mixtures so that they would be stable for use in a foundry for preparing cores.

(Testimony of Kenneth A. Wright.)

Q. What did you do in that connection?

A. I worked in cooperation with Mr. Spiri and Mr. Spotswood.

Q. Who is Mr. Spiri? A. Mr. Spiri?

Q. Yes.

A. He is a gentleman who was working for Shell Development at that time, and at present I believe is working for Associated Oil.

Q. What did you do in your work with these two men?

A. These two men conducted tests with my mixtures at the foundry [382] and made observations as to the success or failures of these tests, and they would make reports to me concerning these, and I would attempt to improve the mixtures so as to overcome the various difficulties that they mentioned.

Q. What formulas were you working with in this period? Was this the formula of asphalt emulsion and sodium silicate?

A. I worked with various formulae, one of which was the one I have previously mentioned, namely, asphalt emulsion and sodium silicate.

Q. What other formulas?

A. Other formulas contained petroleum products, other petroleum products, such as furfural extract and albino asphalt, and similar products. By "albino asphalt" I mean material that is not truly an asphalt.

Q. Do you know whether or not anybody else

(Testimony of Kenneth A. Wright.)

than yourself was doing any work attempting to make a stable solution of asphalt emulsion and sodium silicate, or any other product of that type?

A. Well, I had an assistant under me, Philip Short, who was working with me and merely preparing the mixtures.

Q. There was no one else in any other part of the company that you know of doing the same work?

A. No.

Q. Did you ever make any attempts to make a stable solution of asphalt emulsion and sodium silicate, sodium fluosilicate, aluminum sulphate, and water?

A. I remember a few qualitative tests, or rather — remember where I made a few mixtures, where I made qualitative observations, and came to the conclusion that the mixtures were not stable.

Q. Will you explain that a little further? What do you mean by that?

A. I received some Ruddle's Solution——

Q. The product that I have described is what you know as "Ruddle's Solution" and asphalt emulsion?

A. What is that?

Q. The product that I just described to you is Ruddle Solution, is [383] that correct?

A. Yes.

Q. As far as ingredients are concerned?

A. Essentially so. I received some Ruddle's Solution, I believe, from Mr. Spotswood, and I prepared these mixtures, using asphalt emulsion and

(Testimony of Kenneth A. Wright.)

Ruddle's Solution, and allowed them to stand, and I observed that they separated readily.

Q. Did you ever make any effort to find some method of making those products remain in an emulsified form?

A. I made no effort to use Ruddie's Solution as such with asphalt emulsion to prepare stable mixtures.

Q. By the way, you have read your deposition very recently, haven't you? A. Yes, I have.

Q. Within the last few days? A. Yes.

Mr. Aurich: That was done at your request, Mr. Hackley?

Mr. Hackley: Yes; done when I asked the witness to sign it—at least, I assume that was the time, because that was within the last few days.

Q. Do you believe from your study of the Ruddie Solution that you, as a chemist, could render that solution stable in an emulsion with asphalt.

A. It is my opinion that I could render it equally stable as a water glass solution.

Q. Were you ever asked to do that by anybody in the company? A. No, I was not.

Q. You spoke of this additional work which was done after you completed your work on the water glass and asphalt emulsion, attempting to make that mixture, and the work that you did there; can you give us a little further general picture of what you were doing during that period, and give us the starting and ending points of that work, if any?

(Testimony of Kenneth A. Wright.)

Mr. Aurich: May the witness look at his book?

[384]

Mr. Hackley: Yes; certainly.

Q. By the way, Doctor Wright, you are welcome to look at those notes at any time, but if you do refer to the notes or use them in your testimony, I wish you would state so on the record.

A. Well, I will try to recall from memory what I did.

Q. I just want a general picture of it; that will be sufficient. If you want to use or refer to any of these reports, you may do so, particularly if that work is summarized in any of your reports, you can mention it.

A. In the early part of the second division of my work I attempted to overcome some difficulties which were mentioned by Mr. Spotswood, I believe, and Mr. Spiri, wherein they stated that these core oil mixtures which I had prepared, and which I considered stable, or fairly stable, these core oil mixtures, when mixed with sand, were not as workable as desired; that is, the sand would either stick to the foundry cope, and secondly, the mixtures would not hold together as well as they should, and so I attempted to modify the formula which I had previously established, in order to overcome these difficulties.

Q. On whose instruction, by the way, were you doing this work—Mr. Anderson's?

Q. All right, continue.

(Testimony of Kenneth A. Wright.)

A. As time went on, other difficulties were brought forward, such as pellet formation. The core oil mixtures, when mixed with the sand——

Q. You are now speaking of this product made with asphalt emulsion and water glass?

A. In all cases I am speaking of that product.

Q. Of that product alone, yes. Continue.

A. The core oil mixtures, when mixed with sand, would form small pellets in the sand, which could not be mixed homogenously without a great deal of difficulty, and so I attempted to modify the formula to overcome this difficulty and other difficulties, quite a number of [385] which I do not believe I will mention at this time, were encountered, and in each case I attempted to modify the formula to overcome the difficulties. And in many cases I was successful to a degree. In other cases I was completely unsuccessful and, as I remember, the last thing I did in connection with core oil mixture was to try to improve—that is, the sand mixes, when left exposed on the bench, would tend to dry very rapidly, and I attempted, by the addition of certain agents, to make a mixture to overcome this particular difficulty.

Q. The long and the short of it is that you did work out a product, you and those working with you, which was satisfactory from the standpoint of overcoming these problems, and so reported to the company?

A. Well, it is my opinion that we were never completely successful.

(Testimony of Kenneth A. Wright.)

Mr. Hackley: Q. Who was the Mr. W. J. Hund who signed the Shell Development Company report, a part of your report Exhibit 54?

A. Mr. Hund is one of the assistant directors, I believe.

Q. Of the Shell Development Company?

A. At the time when he signed that report.

Q. I want you to turn to your report, Exhibit 54—

The Court: If there was anything in these various transactions in relation to the evidence adduced here in the last three days in any way successful, the Court has failed to discover it.

Mr. Hackley: I think we are just at the point of showing to your Honor that we have exactly that type of evidence, and I propose to read this report—

The Court: Your extravagant statements in relation to what you are doing and what you have done have not impressed me very [386] much.

Mr. Hackley: I will read the report and, of course, ask it speak for itself.

The Court: Proceed.

Q. That is the first document in your folio, or Exhibit 54, Doctor Wright?

A. If you refer to the letter, it is evident that W. J. Hund wrote it, because he signed it.

Q. Do you know the stenographic initials on that report? A. "A. P. A."

Q. That is who?

(Testimony of Kenneth A. Wright.)

A. It refers to A. P. Anderson.

Q. And N. D. I suppose, is the stenographer?

A. I believe that refers to Norman Davis, the stenographer.

Q. The report annexed to the letter of September 6, 1939, is one which was prepared by yourself and Mr. Anderson, is that correct?

A. Mr. Anderson reviewed and offered suggestions to the report. I wrote the report personally.

Mr. Hackley: Because, your Honor, I think these two documents are extremely important, and I am going to ask leave to read them [387] to the Court at this point, and I think with the reading of these reports I will have closed the testimony of this witness.

This is a letter on the letterhead of Shell Oil Company under date of September 6, 1939, signed, as the witness stated, by W. J. Hund, with the stenographic initials of A. P. Anderson:

“SHELL DEVELOPMENT COMPANY

“Emeryville

“California

“Shell Development Company,

“Shell Building,

“San Francisco, California.

“Gentlemen:

“Core Oil Mixtures.

“We are pleased to enclose Emeryville Report No. 7000 entitled ‘Core Oil Mixtures’.”

(Testimony of Kenneth A. Wright.)

Q. Report No. 7000, Doctor Wright, is your own report, as you stated, reviewed by Mr. Anderson, which is annexed to the letter, is that correct, and part of Exhibit 54?

A. That is correct.

The Court: Who is the report to?

Mr. Hackley: It is a report to the Shell Development Company, your Honor.

The Court: Proceed.

Mr. Hackley (continuing reading): "In a previous report, Emeryville No. 4498, dated January 10, 1939, we discussed methods of producing stable dispersions of bituminous materials in water glass for use as sand-core binders in foundry practice. The present report is in part a continuation of the laboratory work on water glass emulsions and covers the adjustments of the formulae to actual [388] foundry practice. The actual detail of the foundry experiments is given in a report by Messrs. Spiri and Spotswood, re: 'Core Oils containing Sodium Silicate' which was forwarded to the Hague"—

Q. What is meant by "the Hague," Doctor Wright?

A. That, at the time, was the headquarters of the Shell, the Dutch Shell Company.

Q. That is at The Hague, Holland, or the Netherlands?

A. The Hague, Netherlands.

Mr. Hackley (continuing reading): ——"was

(Testimony of Kenneth A. Wright.)

forwarded to the Hague by your letter No. D-646 dated August 7, 1939. In addition core oil mixtures consisting of emulsions that contain no water glass and blends of linseed oil with bituminous materials such as Albino asphalt, which are referred to in the last paragraph of your letter D-646, are covered.

“It was found that by using low penetration index materials such as cracked asphalts and extract fractions, emulsions could be prepared with very low penetration materials. With these low penetration materials the amount of sodium silicate required to give strength decreased until at 2 or 3 penetration it is no longer required. Therefore in view of the additional costs for the silicate mixtures it was decided to abandon them in favor of the other types of core oil mixtures.

“The low penetration asphalt emulsion core binders have the advantages of not being affected by CO_2 , shorter baking time, lack of sensitivity to over-baking and of having no tendency to soften at high humidities. Their main disadvantage is that the emulsion will dry out on standing in the sand mixes; however, this can be overcome [389] by keeping the emulsions and sand mixes in closed containers.

“The linseed blends with extract fractions”

(Testimony of Kenneth A. Wright.)

Q. An extract fraction is an asphalt product, isn't it, Doctor Wright?

A. It is a petroleum product.

Q. What would you call it as a petroleum product? I am not familiar with that art at all.

A. It does not contain asphalt. Asphalt is a different type of material, although it is a residue, in general.

Q. Is the extract fraction what is known as an albino asphalt?

A. An albino asphalt, the asphalt being a misnomer, is generally an overhead, or rather, a distilled product from some of those extract fractions. Also, extract fraction may refer to various distillation cuts from extract residues. Extract residue is the residue obtained from certain petroleum and mining operations.

Q. The extract fraction referred to here is what is commonly called albino asphalt, isn't it?

A. It may include that.

Q. That may be one of them, is that it?

A. Yes.

Q. And that is a product of the Shell Oil Company?

A. It is a product—I don't know if they produce it commercially or not.

Mr. Hackley (continuing reading): "The linseed blends with extract fractions give core oils which appear to have all of the good characteristics of linseed oil. Blends containing as

(Testimony of Kenneth A. Wright.)

much as 60-70% extract fractions give results that are comparable with 100% linseed oil although the extract fractions by themselves are valueless as core oils. The penetration of the extract fraction does not appear to have a marked influence so that in some cases the original extract might be used. [390] Cracked materials with low asphaltene content from mild cracking operations might also be used.

“Information is included in this report on the optimum combinations of materials, baking temperature and baking time and on the influence of sand-core oil ratios.”

This next paragraph, your Honor, I believe, is extremely significant in this case, when it is remembered this letter was written almost two months after Shell attempted to cancel its contract, after Mr. McLaren's letter we saw here yesterday:

“We believe that sufficient information is given for initial sales promotion work. After foundries have been contacted it will undoubtedly be found that many of them have special problems which will require additional testing. Since these problems will probably continually arise we have included in the appendix to the report the information necessary for laboratory testing of core oils.

“The Patent Department have requested that compositions of the core oils made from low penetration emulsions and from linseed-extract

(Testimony of Kenneth A. Wright.)

fraction mixtures be not disclosed to outsiders and be kept within as small a circle of Group employees as feasible for the promotion of these products.

“Yours very truly,

“SHELL DEVELOPMENT
COMPANY

“W. J. Hund”

Q. What is referred to there as “Group employees,” Doctor Wright?

A. I suppose—inasmuch as I did not write the letter, I do not really know, but I suppose that they are referring to all persons connected with Shell. [391]

Q. That is, the different Shell companies, Shell Development Company, Shell Oil Company, Incorporated, and so on, is that right?

A. I suppose so.

Q. That is the way, as a matter of fact, that term is used in your company?

A. I have never used the word before, so I don’t really know.

Q. Then annexed to that letter, Doctor Wright, is the report prepared by yourself and reviewed by Mr. Anderson, that you have referred to, which is dated August 25, 1939, is that correct?

A. Yes, that is correct.

Q. And that report is the report upon which Mr. Hund’s letter is based, is that correct?

A. Well, it is evident, I believe. It must be so.

(Testimony of Kenneth A. Wright.)

Q. And the material annexed to the report, comprising charts, graphs, and, oh, some 40 pages of detailed notes, are included in here as exhibits to the report prepared by you and edited by Mr. Anderson, is that right?

A. Yes, that is correct.

Q. I will put it another way: Do I understand that the list of firms, concerns or places listed on page 3 of your report comprise the places to which your reports were distributed, and the number of copies distributed to those points?

A. That is ordinarily correct. I believe it is correct in this case. [392]

Q. Now, will you just read that report and identify the men whose names are referred to there, in so far as you know who they are? The first one is four copies went to The Hague, Mr. Bastet. Now, who is Mr. Bastet?

A. I can't identify any of those names.

Q. You do not know him at all, do not know of him?

A. There are three men there which I can say—Mr. Bastet, Mr. J. C. van Eck, and Mr. Pyzel—I have never had any personal contact with any of the men.

Q. You do not know them at all?

A. They are not connected in any way with Shell Development, that I know.

Q. They might be perfect strangers to the company, for all you know?

(Testimony of Kenneth A. Wright.)

A. Well, I know they are connected with the company, but that is all.

Q. But you do not know which particular one of the companies they are connected with, of the Shell companies, is that right?

A. No, I do not.

Mr. Hackley: I would like to read this list to your Honor:

Four copies to The Hague, and three to the Amsterdam Laboratory, two to Mr. J. C. van Eck, London, one to Mr. D. Pyzel, New York, one to Shell Oil Company, Incorporated, Asphalt Department, New York, one to Shell Oil Company, Incorporated, Technical Products Department, New York, eight to Shell Oil Company, Incorporated, Manufacturing Department, St. Louis, one to Shell Oil Company, Incorporated, Asphalt Sales Department, St. Louis, one to Shell Oil Company, Incorporated, Technical Products Department, St. Louis, one to Shell Oil Company, Incorporated, Wood River, Attention: Doctor Edlund.

Q. Where is Wood River?

A. Wood River refers to the refinery at St. Louis. [393]

Mr. Hackley: Three to Shell Oil Company, Incorporated, Manufacturing Department, San Francisco, one to Shell Oil Company, Incorporated, Asphalt Sales Department, San Francisco, one to Shell Development Company, San Francisco, and one to the Patent Department, San Francisco.

(Testimony of Kenneth A. Wright.)

Q. I have correctly read the list, have I, Doctor Wright? A. Yes.

Mr. Hackley: That is all with this witness.

Mr. Aurich: No questions.

The Court: Step down.

Mr. Aurich: For your Honor's information, I feel I must say this: I intend to call this witness as my own witness in the defendants' case, and I assure your Honor we will thoroughly explain all the pertinent notations in the notebook, so that they will be readily understandable.

Mr. Hackley: Mr. McSwain.

Mr. Aurich: If your Honor please, we are getting into more and more utter confusion. Mr. McSwain was here yesterday, and I started with opening the defendants' case. Now Mr. Hackley wants to call him for some reason I do not know. He can cross examine him when I get through. It seems to me we are getting hopelessly confused.

Mr. Hackley: Your Honor, I have no objection to letting this matter go until I reach the stage of cross examining. The only thing that disturbs me is I had planned, as I stated yesterday, to call Mr. McSwain as part of my opening case, and Mr. Aurich brought some motions here to dismiss. I want to meet those motions.

Mr. Aurich: If you think Mr. McSwain can help you on those motions, I certainly have no objection to his taking the stand.

Mr. Hackley: I will be just a moment, Mr. McSwain. [394]

JOHN F. McSWAIN,

Called for the Plaintiffs; Previously sworn.

Direct Examination

Mr. Hackley: Q. Mr. McSwain, you have been identified as the head of the asphalt department of the Shell Oil Company, Incorporated, is that correct?

A. Yes.

Q. And you are in charge of asphalt sales, are you, in that department?

A. On the Pacific Coast.

Q. I believe you testified that you are familiar with the Core-Min-Oil subject and all its ramifications?

A. Well, I wouldn't say all of its technical ramifications that I have heard here discussed this afternoon; I am familiar with the general handling of the core oil situation.

Q. It has been more or less under your personal jurisdiction during the time it has been considered by the company, is that correct?

A. In so far as my sales efforts might be concerned.

Q. That is just exactly the point there. Can you tell me whether or not the Shell Oil Company ever attempted to sell so much as one gallon of Core-Min-Oil to anybody during this entire time, from the time it first heard of Core-Min-Oil down to the present day?

A. What do you mean by attempting to sell?

(Testimony of John F. McSwain.)

Q. Offered it to foundries and said, "Here, we are ready to deliver it. Buy it."

A. In those words?

Q. Well, I can't say the words; I want to know the facts.

A. We undertook a sales promotion program after we had signed the contract with Peck and Ruddle. There was no background for this material, which we thought at that time had possibilities. There was no history. It had never been used in a commercial foundry. So we undertook to develop information regarding that material so we could walk into a foundryman's desk and say, "This is what this [395] material will do."

Q. Did you ever walk into a foundryman and say, "Here is Core-Min-Oil. It will do so-and-so. We would like you to buy it?"

A. We couldn't stultify ourselves to that extent. We never even had a product that we could even offer.

Mr. Hackley: Your Honor, I ask that the answer be stricken as not responsive to the question.

The Court: No; it is very pertinent here. He simply makes a statement in no uncertain way, "We simply did not have a product we could offer." I think that goes to the very heart of this case.

Mr. Hackley: The record belies the witness.

The Court: What is that?

Mr. Hackley: I say the record belies the witness on that.

(Testimony of John F. McSwain.)

The Court: That is your statement, only.

Mr. Hackley: Yes.

The Court: It is not of a great deal of value.

Mr. Hackley: Your Honor, I asked this witness——

The Court: The record will stand. Proceed.

Mr. Hackley: Q. Mr. McSwain, can you tell me a single company that you offered to sell Core-Min-Oil to?

A. Well, of course, that word “offer” is one that would require a definition before I can answer that question properly. We moved into the Vulcan Foundry on the theory that we had to get this material into commercial use in at least one foundry where it would be used as a run-of-the-mill product, so we could go to other foundries and tell what was done. We never had a material that the Vulcan Foundry could use in their commercial operations. It never got beyond the laboratory stage.

Q. On what do you base that statement?

A. Well, I base that statement upon innumerable reports that came to me from the [396] men who were working with it.

Q. That is, your employees?

A. Employees of the Shell Oil Company.

Q. That is what I mean. Did you ever attempt to interest any foundry using electric ovens, in Core-Min-Oil?

A. Well, I think that my first answer answers that question.

(Testimony of John F. McSwain.)

Mr. Hackley: If your Honor please, I move to strike the answer as not responsive.

The Court: Let the record stand. Proceed.

Mr. Hackley: Q. You are familiar with the fact that there are foundries that use electric ovens, aren't you, Mr. McSwain?

A. Well, I have been told so.

Q. Well, in your capacity as manager of this department of the great Shell Oil Company, you know that as a fact, don't you?

A. No, I do not.

Q. You have never made an investigation of the electric oven foundry market?

A. No, we did not.

Q. You can't tell me today the name of a single foundry using an electric oven?

A. I cannot name a single foundry that I know of that is using an electric oven.

Q. Have you ever known of one, to your knowledge today?

The Court: Do you know one?

Mr. Hackley: Yes, I do, your Honor.

The Court: Who?

Mr. Hackley: I have a long list of them right here; right here in San Francisco Bay, the Yuba Gold Dredge Company, which uses nothing but electric ovens, at Benicia. Down in Los Angeles——

The Court: Wait a minute; wait a minute. The Natomas Company?

Mr. Hackley: No. The Yuba Consolidated Gold-

(Testimony of John F. McSwain.)

fields have a foundry at Benicia. At that foundry they have electric ovens.

The Court: Just a minute, now. [397]

Mr. Hackley: Yes, your Honor.

The Court: You are rather reckless in your statement. If there are a half-dozen of men working at Benicia with an electric oven, I am misinformed. I am going beyond this record. The only reason I am saying that is just to have you realize that you are making some statements that won't be justified. The Yuba company, as a matter of fact, had suspended their foundry end of it for years. They may be operating now; I do not know.

Mr. Hackley: I am only quoting information which I received last week, your Honor. I have never been to the plant.

The Court: I don't know, either.

Mr. Hackley: You asked me if I had ever known of a single foundry. Yes. For example, the Worman Steel Casting Company in Los Angeles used electric ovens.

The Court: How do you know that?

Mr. Hackley: I have a letter—this is not evidence, and I hope you will understand I am not testifying——

The Court: I am interested, myself.

Mr. Hackley: The Young Brothers Company, industrial oven manufacturers, at Detroit, Michigan, advises that the following companies all use electric foundry ovens only, or if not only, largely:

(Testimony of John F. McSwain.)

One thus is the Vancouver Iron and Steel Company, Vancouver, Washington; the General Electric Company, Baltimore, Maryland; the Canadian Westinghouse, Ltd., Hamilton, Ontario, Canada; the Keokuk Steel Casting Company, Keokuk, Iowa, which I understand is a very large foundry; the Norfolk & Western Railroad Company at Roanoke, Virginia; the Westinghouse Electric Company, Pittsburgh, Pennsylvania—not a small company in itself, and, incidentally, a very large manufacturer of equipment for foundry ovens. [398]

The Court: When we adjourn today, we will have to adjourn to Tuesday. I should think for all our information some inquiry should be made in that respect.

Mr. Aurich: I have a man here, your Honor, who can give you the information which you want.

The Court: Who is he?

Mr. Aurich: This is a witness I expect to produce on behalf of the defendants.

The Court: I would be glad to hear what he has to say. I sit here and hear so many reckless statements made from day to day.

Mr. Aurich: May it please your Honor, may I introduce Mr. Harry W. Dietert, who is the owner of the H. W. Dietert Company of Detroit, Michigan, and he has had actual practical foundry experience for the past 20 years, and is now employed as a consultant for various foundries. He has worked up from a natural core-maker to chief

(Testimony of John F. McSwain.)

engineer of the United States Radiator Corporation, who are the operators of seven large foundries.

The Court: Are you familiar with the firms that were mentioned here?

Mr. Dietert: I am with some, yes.

The Court: Tell me about these electric furnaces. They were so expensive in my day they couldn't consider them.

Mr. Dietert: They are still in the same category, your Honor.

The Court: That was 40 years ago.

Mr. Dietert: Yes, and they are today. You can find them, it is true.

The Court: In isolated cases?

Mr. Dietert: That is right.

The Court: And on a small scale, on small cores.

Mr. Dietert: They have a fairly large one at General Electric [399] at West Linn.

The Court: You know, I worked with the General Electric at Schenectady.

Mr. Dietert: I did not know that, your Honor.

The Court: Oh, yes. That is the reason I can't sit idly by here and listen to what I have listened to in the last few days and mislead anyone. I hope that I never get so judicial that I try to mislead anyone at all. This record would be a record for anybody to read that thought he knew something about the foundry business, or cores, or core-making. It is food for thought.

(Testimony of John E. McSwain.)

Mr. Dietert: You can count the electric furnaces, core ovens, on your hand. There are only a dozen out of—let's see—there are over 4,000 foundries in the American States, and let us say there are a dozen foundries using them, and most of them, like Westinghouse and Canadian Electric and General Electric, why, they were trying to sell those electric ovens to foundries; they use them, and they are still there, and some places where they do not have good fuel handy, they may be using electric .

The Court: This sort of procedure is not known in our Federal Courts, but I do this for the benefit of those who may have an interest to come here. I can't get away from it. Our function is to try and do the thing that we are expected to do. Thank you for your information. I was wondering if I was wrong.

Mr. Aurich: I may say, your Honor, Mr. Dietert is going to be an expert on behalf of the defendants, to tell us all something about the art of core-making.

Mr. Hackley: I might say in this list I have here, your Honor, alone, there are 12 foundries all using electric ovens, which are named. I can't tell your Honor how large or small they are, but I have heard of such ovens. [400]

The Court: There is sufficient here to have you now not waste your time further. Proceed.

Mr. Hackley: Q. As part of the sales pro-

(Testimony of John F. McSwain.)

gram, attempting to carry out the terms of the contract, Exhibit 5, did you, or anybody in connection with your company, to your knowledge, ever attempt to survey the market for electric ovens?

Mr. Aurich: What was that question?

(Question read.)

Mr. Aurich: There is nothing in the contract that called upon the Shell Company to make any search of any market.

Mr. Hackley: Ah, but there is something in the contract to the effect that Shell Company has undertaken an obligation to sell Core-Min-Oil, and that means to sell it; that does not mean "I don't want to sell it because I don't want to stultify myself."

The Court: Did you make an objection?

Mr. Aurich: I object on the grounds stated.

The Court: I sustain the objection.

Mr. Hackley: No further questions.

Mr. Aurich: That is all, Mr. McSwain.

BERNARD JAN GRATAMA,

called for the Plaintiffs; sworn.

The Clerk: Q. Please state your full name to the Court.

A. Bernard Jan Gratama.

Mr. Aurich: Q. Will you please keep your voice up while you are on the stand so I may hear you?

A. All right.

Direct Examination

Mr. Hackley: Q. What is your occupation?

A. Manager of the patent department of the Shell Development Company. [401]

Q. In San Francisco?

A. In San Francisco.

Q. How long have you held that job?

A. Sixteen years.

Q. All that time in San Francisco?

A. Yes.

Q. Are you an attorney-at-law? A. Yes.

Q. When were you admitted to practice?

A. '28.

Q. In California? A. In California.

Q. Do you recall that you were directed to handle the prosecution before the United States Patent Office of certain applications for patent, in which one Allan B. Ruddie was the applicant?

Mr. Aurich: May I hear the first part of that question?

(Question read.)

(Testimony of Bernard Jan Gratama.)

Mr. Aurich: I do not understand what you mean by "directed," Mr. Hackley. Do you mind explaining that?

Mr. Hackley: I think the witness knows what I mean by it.

The Witness: No, I do not, either.

Mr. Hackley: Q. You do not. Well, do you understand the word "employ"?

A. What I think you are driving at is after we made the agreement with Messrs. Peck and Ruddie, at their request we took over the prosecution of some application which they were handling. I did not do it personally, but it was done in my office.

Q. By "agreement," do you mean the agreement, Exhibit 5, which I am showing you?

A. After this agreement was executed, yes.

Q. And you continued to handle the prosecution of those applications for patent for some time?

A. Yes.

Q. And you prosecuted the application for patent of Allan B. Ruddie and one Earl H. Spotswood as joint applicants, relating again to the general subject of core oil?

A. Offhand I would say yes, that was one of the cases.

Q. I show you two patents; one is Plaintiff's Exhibit 1 and the [402] other is Plaintiff's Exhibit 2, and I ask you if these are two of the patents I have referred to, or the applications——

Mr. Aurich: Unless you want the witness to

(Testimony of Bernard Jan Gratama.)

particularly answer, Mr. Hackley, I will stipulate to that.

Mr. Hackley: And you will stipulate that he filed, or under his direction there was filed the Spotswood-Ruddie patent application?

Mr. Aurich: I believe that application was filed by Mr. Zublin, and that being the fact, I will stipulate to it. Mr. Zublin was under Mr. Gratama's supervision, indirectly.

Mr. Hackley: I have here, your Honor, a file of correspondence which passed between the parties subsequent to the making of the contract and down to the time of the receipt of the alleged notice of cancellation. There are parts of this file which undoubtedly of little weight so far as this proceeding is concerned; but in order to present to the Court those parts which I will rely upon in my case, I have included every communication, or attempted to include a copy of every communication going in each direction. Mr. Aurich has stated, very kindly, he will not object to the form of these documents, or require further identification of them, and I state the offer is made with the understanding it is intended to be a complete file, and if there is anything omitted, you may substitute it, Mr. Aurich, if you wish. Therefore, I offer a file of correspondence covering the period April 8, 1938, to and including July 26, 1938, as Plaintiff's Exhibit 55.

Mr. Aurich: Mr. Hackley's statement is correct, your Honor, in that I do not object to the

(Testimony of Bernard Jan Gratama.)

lack of foundation or authentication. [403] However, I have not had an opportunity to compare them, and it is subject to correction if error is found. However, I do have a serious objection to the materiality, the cluttering up of an already overburdened record, with a mass of immaterial letters such as, say, "We are sending you herewith our files of October 18th. After you have looked it over, let us have your opinion."

The Court: Admitted.

(The file of correspondence referred to was marked Plaintiff's Exhibit No. 55 in evidence.)

Mr. Hackley: The plaintiff rests its case in chief, your Honor.

(Plaintiffs rest.)

Mr. Aurich: At this time, your Honor, I would like to renew my motion to dismiss on the grounds I mentioned yesterday afternoon. I could argue it, but I do not propose to do so unless your Honor desires me to do so.

The Court: For the purpose of the record, the motion will be denied.

Mr. Aurich: As to both defendants?

The Court: As to both defendants, at this time.

Mr. Aurich: Mr. Dietert, will you take the stand?

Mr. Hackley: Your Honor, I think we have a

witness, Mr. McSwain, on the stand. Shouldn't we complete his examination?

Mr. Aurich: I think these matters have been so mixed up, your Honor, in view of the recent developments in the plaintiff's case, of which I had no knowledge yesterday, I believe I should be permitted to proceed in my own way.

The Court: Why?

Mr. Aurich: Why shouldn't I put Mr. McSwain on? [404]

The Court: How can counsel here suggest your order of proof?

Mr. Aurich: Counsel can't.

The Court: Proceed.

Mr. Aurich: Mr. Dietert, will you be sworn?

Mr. Hackley: I was merely asking your Honor. I am not trying to instruct Mr. Aurich how to try his case, but I think the orderly process is to finish with one witness before another one is called.

The Court: That does not apply to all the witnesses. Proceed.

HARRY W. DIETERT,

Called for the Defendants; sworn.

Direct Examination

Mr. Aurich: Q. Will you please state your age?

A. My age is 45.

Q. And your residence?

A. 12 315 Broad Street Boulevard, Detroit, Michigan.

(Testimony of Harry W. Dietert.)

Q. And your occupation?

A. My occupation is manufacturer and foundry consultant.

Q. In what lines are you a manufacturer?

A. I manufacture a complete line of foundry sand and core-testing equipment under specifications of the American Foundry Association. I also manufacture a line of moisture-testing equipment and spectrographic analysis.

Q. Do you maintain a laboratory at your place of business?

A. Yes, I do.

Q. What, generally, is the purpose of maintaining that laboratory?

A. I use this laboratory to connect up theoretical ideas with foundry practice. In other words, I have a complete line of [405] testing equipment which gives me the test data. I take the test data and then I go into the foundry and put into foundry practice the test data, and arrive at the answer a lot faster than without either.

This laboratory is maintained by several companies to determine whether or not their product is suitable, or whether or not their product comes up to a set standard quality. Laboratories also used to settle disputes between shipper and consumer—in other words, we act as arbitrators, in the sense they take our word for it, what we say—of course, we also use the laboratory to develop new foundry materials.

Q. The name of your company is the Harry W.

(Testimony of Harry W. Dietert.)

Dietert Company, and you are the owner of that company?

A. That is the name and I am the owner.

Q. How long have you owned that company, Mr. Dietert?

A. I have owned that company since 1925.

Q. Will you please state what training and experience you have had in foundry practice?

A. Just in foundry practice, or my college training, too?

Q. Include your college training also, please.

A. I finished Iowa State College in 1920; obtained a degree of Bachelor of Science and Mechanical Engineer. Immediately thereafter I went with Westinghouse Electric Manufacturing Company of East Pittsburgh, Pennsylvania, as a technical apprentice. We went through different departments of their plants—entirely practical work, to train college men so they knew the practical end. While there I had training in the foundry, in the machine shop, did actual molding and core-making. I did also in college. I stayed there 14 months, and in 1921, 1922,—that is, nine months—I took the position as foundry instructor and machine shop instructor [406] at Rice Institute, Houston, Texas. After that school year I returned to Westinghouse and the foundry. I there worked directly under the foundry superintendent, Mr. Soss. He got me very much interested in the foundry sand problems, and I had more molding and core-making experience—

(Testimony of Harry W. Dietert.)

that was only for three months. Then I entered the graduate school of the University of Illinois. That was the fall of 1922. That spring, in 1923, I received the degree of Master of Science of the University of Illinois. During the school year, while I was at the University of Illinois, I had the opportunity to do my research work in foundry sands under the direction of the technical secretary of the American Foundry Association. August 1, 1923, I entered the employment of the United States Radiator Corporation as a plant engineer of the Detroit plant. My duties as plant engineer at Detroit were to install the new equipment that they had bought for the foundry, see that it was maintained, and also the iron mixtures, sand mixtures, and anything the foundry superintendent wanted done. In 1927 I was appointed the chief research engineer of the United States Radiator Corporation for all of their seven foundries. I visited them all, regularly. I had control of their sand; all the materials bought for those plants had to be accepted by me, and then the purchasing department would buy the materials. I also instituted a sand control system. By that I mean a system whereby the foundry would measure the moisture content of the sand, the openness or permeability, the green strength, that is, the bond it possessed, and the dry bond it possessed, the strength of the cores, and fineness, and clay content of the sand. We studied our sand very carefully, and our oils that were used for cores, and we were responsible to the general office

(Testimony of Harry W. Dietert.)

for producing a good foundry loss. I think the United States Radiator Corporation have [407] a record of exceedingly good foundry practice. In 1933 I was promoted to the chief engineer of all the plants. I had charge of the pattern construction, all the core equipment, all the equipment bought for all the foundries; still retained control of the materials for their foundries, designed the equipment, such as boilers, radiators, and what-not, so that it would be designed right for the foundry—wouldn't have these patterns coming in here looking like somebody else should mold them and not your own foundry. In 1936 my other duties with my company were getting rather heavy, and I took the position with the United States Radiator Corporation as consulting engineer. That meant I would have more time for my company. I still serve that company in that capacity.

Q. During the period of time that you were chief engineer for the United States Radiator Corporation, who, if anyone, was responsible for the loss of cores, or the loss of castings?

A. I was held responsible to the manager of all plants and the vice-president of production, Mr. McIntyre.

Q. Are you a consulting engineer for any other company than the United States Radiator Corporation?

A. Yes, I am.

Q. What company or companies?

A. Well, I am retained by the J. S. McCormick Company of Pittsburgh, Pennsylvania, continually.

(Testimony of Harry W. Dietert.)

Then I do work for numerous other companies, like Key Company in East St. Louis. It is a steel foundry.

Q. You will have to spell those names, I am afraid, Mr. Dietert.

A. Key, K-e-y Company, in East St. Louis, and the other company was J. F. McCormick.

Q. You said the Key Company was a steel foundry?

A. Yes, it was a steel foundry. We worked for the Kelsey Wheel Company of Detroit. At the present time they are working on bombs. [408] Electric Steel of Canada, the same kind of a casting.

Q. Electric Steel Company of Canada?

A. Electric Steel Company of Canada, Three Rivers, Quebec.

Q. Do the Kelsey-Hayes Wheel Company of Detroit and the Electric Steel Company of Canada operate and maintain foundries?

A. Oh, yes, they do—large ones.

Q. I do not know whether you detailed generally your duties when you first went to work with Westinghouse as an apprentice, but with special attention to foundry work and core-making, can you tell us in a few words—

The Court: Spent 14 months after college in Westinghouse.

The Witness: Yes.

Mr. Aurich: My point was whether he made cores there, or what he did.

(Testimony of Harry W. Dietert.)

The Court: He said he made cores and foundry work, both.

The Witness: Yes.

Mr. Aurich: Thank you, your Honor.

Q. Now, you have spoken about the U. S. Radiator Corporation. Do they operate foundries?

A. Yes, they do. They operate a group of foundries.

Q. How many, please?

A. At the time that I was with them continually—that is, every day—we operated seven foundries; we had a total of eight plants, seven foundries, though, only.

Q. Can you tell us generally the daily output of each of those foundries?

A. Oh, yes. The Detroit, the Dunkirk, and Corry plants had a capacity of 100 tons each. Sometimes they got as high as 120 tons out of them. Whereas the Detroit and West Newton plant would have a normal output of around 50 tons. The Geneva Foundry generally put out 30 to 35 tons, and the Bristol, Pennsylvania, [409] plant, where we made steel boilers, we had an output of—well, it would get near 20 tons a day.

Q. How do those foundries that you have referred to, that were operated by the United States Radiator Corporation, rate in so far as their size is concerned?

A. Well, the three large ones, Detroit, Dunkirk and Corry, would be rated as large foundries.

(Testimony of Harry W. Dietert.)

The Court: Q. How many core-makers do they employ?

A. Core-makers, we would have, as a rule—let's say Dunkirk and Corry—those were the two radiator foundries—we have around 40 core-makers, whereas at the Detroit plant, where we used mechanical equipment and the cores are larger, we would have around 15 to 20 core-makers.

The Court: We are interested in core-making.

Mr. Aurich: Yes, your Honor.

The Court: Proceed.

Mr. Aurich: Q. In the United States Radiator Corporation, during the time that you were familiar with their operations, what is the percentage of loss in cores that was permitted there?

A. We asked the core room to deliver to the foundry cores with a loss not to exceed one and one-half percent, and we would run along sometimes only half of one percent loss.

Q. And what was the percentage of loss in castings that was permitted by the United States Radiator Corporation, in so far as you know, while you were connected with it?

Mr. Hackley: I object to that as irrelevant and immaterial, what is permitted; I think if it has any materiality, it is what actually happened, your Honor.

Mr. Aurich: Well, I will ask him what actually happened.

A. The Detroit plant, for example, one year we set what we believed was an awful good record for

(Testimony of Harry W. Dietert.)

a water-tested casting. In other [410] words, the hydraulic-tested casting must hold water at 80 to 90 pounds per square inch, no welding allowed. We put through castings that year with a loss of three percent.

In the radiator foundry it is a little more difficult. The radiator metal line is getting very thin. We would run foundries at five percent. That is when we would say, "Boys, you are doing a good job." And I could safely stay in the office and do what I wanted to. But when the loss would get around six percent or seven percent, I have had to get out there and show them how to get that loss down so the foundry superintendent could produce results. [411]

Q. Have you ever testified as an expert in any litigation before you testified here today?

A. No, I have not.

Mr. Hackley: Are you calling him as an expert here, Mr. Aurich?

Q. Are you a member of any technical society and, if so, which ones?

A. Yes. I am a member of the American Foundry Association, the American Society of Metals, the American Society of Testing Materials, and the American Optical Society.

Q. Have you done any work or participated in the doing of any act of work for the American Foundry Association?

A. Yes, I had the pleasure of serving on a

(Testimony of Harry W. Dietert.)

number of committees and as chairman each year since 1923.

Q. Are you the author of any publications dealing with foundry practice, and, if so, can you name just a few of them, please?

A. Yes. I have a book on the press now. The American Foundry Association are publishing it. It is a large volume dealing with the complete story of core practice. I have written an innumerable number of reprints for the various technical societies on foundry practice. And I just recently published a book for the Great Lakes Foundry called "Foundry Sand Control," and others.

Q. Are you generally familiar with the foundry practice that is employed in the various foundries in the United States?

A. Yes, I consider myself very familiar with the American foundry practice.

Q. Generally speaking, will you name a few of the foundries with whose practice you are familiar?

A. The American Radiator Corporation, American Radiator, General Electric—all of their plants.

The Court: Q. Have you ever been in a General Electric [412] plant foundry?

A. General Electric?

Q. Yes.

A. Which foundry, your Honor?

Q. Schenectady.

A. Yes, I have been there.

Q. When were you there?

(Testimony of Harry W. Dietert.)

A. At the time when I bought——

Q. What year?

A. I will connect it up with the Pyrometer. I would say that was around 1938—running through the patent department.

Mr. Aurich: Q. 1938? A. About 1938.

Q. Can you continue to name any other foundries?

A. The foundries of Westinghouse Electric, Buffalo Machine—all American Steel foundries.

The Court: For the purpose of this case, while I do not want to guide you or to suggest to you, but I have in mind conserving time, I suggest since the only issue here is cores and their use or abuse, that you confine yourself to that phase of the case.

Mr. Aurich: Yes, your Honor. In that connection, your Honor, some remark you made during the plaintiffs' case has somewhat perplexed me in regard to the defenses that I had prepared, and if I might take the time of the Court and have your Honor's indulgence for just a moment, I might explain my position.

The Court: The only thing you need to concern yourself about is the record here in the event that when I dispose of this case it goes elsewhere. That is all you need to concern yourself about.

Mr. Aurich: Your Honor indicated this afternoon you did not want to hear any testimony about any electric ovens—or, rather, you did not want to hear any testimony, if I remember correctly,

(Testimony of Harry W. Dietert.)

concerning the making of cores with Mr. Ruddle's [413] Core-Min-Oil in anything——

The Court: No, I did not say that. I did not say that.

Mr. Aurich: Q. Are you familiar, Mr. Dietert, with the type of ovens that are used in the majority of the foundries that are in use in the United States?

A. Yes, I have worked with them; very familiar with them—Eastern foundries——

Q. Pardon me?

A. Eastern, Midwestern foundries—I am very familiar with them.

Q. Will you state what type of ovens are used in a majority of those foundries with respect to whether they are indirect or direct-fired ovens?

A. Direct-fired.

Mr. Hackley: I object to the question as calling for a conclusion of the witness, for which no proper foundation has been laid.

The Court: It is sufficient foundation for all purposes of this case. Read the question, Mr. Reporter.

(Question read.)

Mr. Aurich: Q. What is the percentage of foundries in the United States that are using direct-fired ovens as compared to the number of foundries using indirect-fired ovens?

Mr. Hackley: I object to the question on the grounds that no proper foundation has been laid.

(Testimony of Harry W. Dietert.)

The Court: Answer it. The objection is overruled.

A. I estimate around 20,000 core ovens in use in America, and you would have a hard time naming twelve electric core ovens, and those twelve are using or are interested in electricity—well, let us give it one or two per cent. I don't know exactly. It wouldn't be many.

Mr. Aurich: Q. Do you know of any other type of indirect-fired ovens other than the electric oven?

A. In the foundry I haven't seen any other than the electric. [414]

Q. In your opinion is an electric oven efficient for all practical purposes for coremaking as a direct-fired gas oven?

A. I had some experience with an electric-heated oven at the Fremont Foundry, Fremont, Ohio. I was called in there on account of the cores were not baking right. It was an oil bonded core, and a good oil, too. And we found that they had neglected to ventilate the oven. Got the oven ventilated, and the fellow was making pretty good cores. But then it was too expensive to operate. Now it is oil-fired.

There are one or two others that had indirect and went to the direct. There is Dow Chemicals, French Hecht—I guess you could think of others that went along, but they aren't satisfactory. Too expensive to operate.

Mr. Hackley: I move to strike the answer, if

(Testimony of Harry W. Dietert.)

your Honor please, on the ground there has been no foundation laid for the testimony, conclusion, speculation, and not responsive to the question.

The Court: The objection is overruled.

Mr. Aurich: Q. Will you name some of the commercial core oils which are now on the market and with which you are familiar?

A. I will name Linoil, Smith, Kellogg, Quandt, Swan and Fish make a whole series, Aristo——

Q. Could I hear that one again, please?

A. Aristo, A-r-i-s-t-o. Houghton make a series.

Q. Well, that is enough for my purposes. There are others? A. Yes.

Q. You are familiar with them?

A. And I have used them.

Q. Which of those you have named do you consider the best core oil for all practical commercial purposes?

Mr. Hackley: I object to the question on the ground that [415] no proper foundation has been laid.

The Court: Overruled.

A. I like the linseed oil, base oil, best, and I choose Linoil.

Mr. Aurich: Q. And what is Linoil?

A. Linoil generally tests around 62 per cent of linseed oil, and it has gum resin in it which has been treated with lime and then kerosene in it, a light kerosene generally used.

Q. What type of linseed oil do they use, boiled or raw?

(Testimony of Harry W. Dietert.)

A. When they buy it, they buy it raw, they boil it, the linseed oil, the resin, the gum resin together, and add the kerosene, so it doesn't settle out. [416]

Q. Is the type of core oil that is used in the making of cores a matter that is considered of some importance in foundry practice, or is it an unimportant matter?

Mr. Hackley: I object to that as speculative, your Honor. There is no foundation——

The Court: Read the question, Mr. Reporter.

(Question read.)

The Court: You may answer.

A. It is very important.

Mr. Aurich: Q. And why is that, Mr. Dietert?

A. Because so much depends upon getting good cores with a minimum amount of trouble.

Q. Do you know in all your experience in the foundry art and especially relating to coremaking, of any successful core oil containing sodium silicate as one of its ingredients that has ever been commercially manufactured and sold?

Mr. Hackley: I object to that as incompetent, irrelevant and immaterial to any issue in this case.

The Court: Objection overruled. He may answer.

A. I know of no successful core oil that uses sodium silicate as the base.

Mr. Aurich: Q. Do you know of your own knowledge whether foundry men in the past have attempted to use or experiment with core oil which

(Testimony of Harry W. Dietert.)

contained sodium silicate as one of its ingredients?

Mr. Hackley: Same objection.

The Court: Overruled.

A. Yes, I do know of cases. I have tried that myself, when I first went with Radiator.

Mr. Aurich: Q. What do you mean when you first went with [417] Radiator? When you first went with the U. S. Radiator Corporation?

A. Yes.

Q. That was in 1923?

A. That was in the fall of 1923.

Q. What were the results of your attempts to use core oil containing sodium silicate?

Mr. Hackley: I object to that as incompetent, irrelevant and immaterial. We have here no question——

The Court: The Court is prepared to rule. The objection is overruled.

A. They were unsuccessful.

Mr. Aurich: Q. Do you know any reason why core oils containing sodium silicate as one of their ingredients were unsuccessful?

A. Well, we concluded—I did—under my direction, actually tried myself—that sodium silicate was inherently unsuited as a core binder, the difficulty in baking, moisture absorption, which gives you a strength loss when the core was stored or in storage, or when it was placed in the mold and you didn't pour the mold right away you absorbed a lot of moisture on the surface of the core——

(Testimony of Harry W. Dietert.)

Q. I think that is enough. There are other reasons? A. There are.

Q. That will be sufficient for this time. Have you recently used a core oil containing sodium silicate as one of its ingredients in the preparation of cores for foundry uses? A. Yes, I have.

Q. When did you commence such work?

A. The actual work began [418] October 25, 1941.

Q. And where was this work done by you?

A. The work was carried out at the United States Radiator Corporation Foundry in Detroit, in the Acme factory in Detroit, and at my own laboratory in Detroit.

Q. Now, without going into detail, will you tell us just generally what you did in your work with this core oil that contained sodium silicate as one of its ingredients?

Mr. Hackley: If your Honor please, I object on the ground that it purports to cover ex parte taxes, and we had here this morning the objection from our opponents here on that very same score as to tests which were performed by us—examples of those tests which were brought in——

The Court: You got it in the record.

Mr. Hackley: Subject to a motion to strike. May this be admitted with the same understanding?

The Court: This will be admitted the same way.

(Testimony of Harry W. Dietert.)

Mr. Aurich: Q. The question was just what generally did you do in that work, without too much detail, Mr. Dietert?

A. I used production core boxes and regular foundry practice, and made cores, observed results, then I would take the material and mix it in the laboratory and thoroughly test it for all known physical properties that a core should possess in accordance with AFA test procedure, and other tests that are in use.

Q. What type of oven did you use in making these cores at your laboratory?

A. I used an AFA test baking oven, which is heated by electricity.

Q. What type of oven did you use at the U. S. Radiator Corporation?

A. They are coke-fired, and of the Holcroft type. [419]

Q. Will you spell that, please?

A. H-o-l-c-r-o-f-t. The firebox is independent from the core baking ovens—a whole array of them. It is well ventilated with blowers.

Q. Is the Holcroft type of oven a standard oven used in core baking?

A. Yes, I find a lot of them in the foundries as I go around, and it is considered by many foundries as being the best.

Mr. Hackley: I object to that and ask the last part of the answer be stricken as mere hearsay, "it is considered," and so forth.

The Witness: May I have an opportunity to

(Testimony of Harry W. Dietert.)

answer it differently? My own experience has shown me it is a good oven. I have used them since 1923.

The Court: Proceed.

Mr. Aurich: Q. Generally, what type of equipment, if any, did you use for testing purposes? Just name a few of the pieces of equipment.

A. I used a moisture teller, permeability meter, the Universal sand strength machine, core hardness tester, AFA test oven, Sinter meter and others like it, dilatometer, which is a big furnace to test cores at pouring temperature of molten metals.

Q. Will you tell us what ingredients were contained in this core oil with which you worked in your laboratory and at the two foundries mentioned by you, other than sodium silicate?

A. Asphalt.

Q. What type of asphalt was it, emulsion or otherwise?

A. It was an emulsion, Y-104, premixed Colas. That was the tag on the can.

Q. What else did you use?

A. I used sodium silicate, 40 Baume, from Philadelphia quartz, and I used in these series [420] tests and foundry work a Michigan Lake sand which is used in that district, throughout the Midwest. It is one of the most popular sands that we have.

Q. Were there any other ingredients in this core oil other than the Y-104 asphalt emulsion and the sodium silicate? A. Yes, sir.

(Testimony of Harry W. Dietert.)

Mr. Aurich: Q. Where did you get the asphalt emulsion which you used in that work with this particular core oil? A. Shell Oil Company.

Q. Can you tell me how you mixed the sodium silicate solution mentioned by you, if you did mix it? A. Yes, I can give you the procedure.

Q. Will you tell us, please.

A. I had three different formulas. One is the formula we call the 24 Baume solution, in which we added one ounce of aluminum sulphate to one-eighth gallon of water, and we added one ounce of sodium fluo-silicate to seven-eighths gallon of water. We combined these two and immediately added one gallon of sodium silicate. The other one, we added four ounces of aluminum sulphate to a half gallon of water, and then we took another half a gallon of water and added four ounces of sodium fluo-silicate. We combined these two to make a gallon of material and then added three gallons of sodium silicate. The other one is quite similar. We took a gallon of water and added an ounce of aluminum sulphate and an ounce of sodium fluo-silicate. To that was added two gallons of sodium silicate. That we called a 30 Baume material. The other one was a 32 that I have just previously mentioned.

Q. The one-to-three was that Baume?

A. 32. [421]

Q. And the one-to-two was what?

A. 30 Baume.

Mr. Aurich: For your Honor's information, so that you may perhaps follow the continuity of this

(Testimony of Harry W. Dietert.)

testimony, that has not all come in, we will establish subsequently that those are the formulas given by Mr. Ruddle to the Shell Company.

Q. For our purposes, Mr. Dietert, and for the purposes of your testimony, let's call the first solution mentioned by you Ruddle's solution No. 1, which I understand was a ratio of one gallon of water to one gallon of sodium silicate.

A. Correct.

Q. And the one where you used one gallon of water to two gallons of sodium silicate we will call the Ruddle's solution No. 2. A. O. K.

Q. And the one where you used one gallon of water to three gallons of sodium silicate we will call the Ruddle's solution No. 3.

Q. Following the mixing of the solution, do I understand you made some cores with them?

A. I made quite a number of cores.

The Court: Q. Tell us what you did.

A. All right, sir. The first thing I did was to go in my laboratory and I made up test cores, a complete series of all the known tests that we have today, and determined how the core behaved at room and elevated temperatures. That gave me an idea of what I should do with this particular new oil to make it work in a foundry, what to watch out for, and I took these solutions over to the United States Radiator Foundry and I made some test cores there. I made cores from regular production core boxes, like boiler sections—A-size, that is; I

(Testimony of Harry W. Dietert.)

made water-bottle cores and block cores for flasks. I mixed the sand in the regular paddle type of mixer at the Radiator, and worked with [422] the right—what we thought was the right procedure and should give us good cores—tried our best—and every core that came out of the Holcroft oven was not satisfactory to set in the mold. The small prints of the water-bottle were too weak and the outside of the core was a little bit fuzzy from the CO₂ and the sulphate gas in the core oven. I didn't have any success at the Radiator Foundry, but I did discover right away they wouldn't bake so well. I wasn't through—I was expecting something big real fast. I didn't find that to be the case. I had a lot of trouble in baking through chunk cores. Sometimes it would and sometimes it wouldn't. We decided—with my helper, Mr. Shuch, who helped me with the work, that we would shift our scene of operation to the Acme Foundry to see whether we couldn't get something there which would fit in. The final result was that the way I could make a good casting regularly was to bake the cores in my own laboratory with an electric oven, take the cores over to the foundry—and I brought them over the same day or either kept the cores in a dry place.

Q. Now, in making your cores with these solutions and asphalt emulsion, what was the ratio or what were the percentages of the various ingredients that you used?

A. All right, sir. I can name those. For the

(Testimony of Harry W. Dietert.)

24 Baume I used 1750 cc's of dried sand and 125 cc's of the 24 degree solution and 40 cc's of the asphalt emulsion. That was one formula.

Q. All right. Did you use other formulas, and if so, give them to us briefly, please.

A. Yes, I did. Another formula that I used was 1750 cc's of dried sand and 80 cc's of solution 32 Baume, and 50 cc's of asphalt emulsion. And the other solution was exactly the same only we used 30 degrees Baume. [423]

Q. Now, you have referred to a solution consisting of 1750 cc's of dried sand, 125 cc's of the solution and 40 cc's of asphalt emulsion. Did you add any water to that solution?

A. Yes, I did; I added some water to that.

Q. How much water did you add?

A. I added 90 cc's of water.

Q. Where did you get that formula, or anything approximating it?

Mr. Hackley: Mr. Aurich, do I understand he added the water to each formula?

Mr. Aurich: I don't think so.

Mr. Hackley: Which one did he add it to?

The Witness: That was for the 24-degree one. This particular type of sand required water to temper it, so I got a mold and made it in a core box.

Mr. Aurich: Q. Where did you get the formula that approximatd the one you have just referred to? A. It was in the patent.

Q. I show you the patent which is Plaintiffs' Exhibit 1, one of the Ruddle patents in suit, and call

(Testimony of Harry W. Dietert.)

your attention to the formula appearing on the second page, and ask you if that approximates the formula that you had reference to. A. It does.

Q. The difference being that in the patent it calls for 65 cc's of water, and you used 90?

A. That is right.

Q. Now, taking all three of these core oils with which you worked, the Ruddle No. 1 and the Ruddle No. 2 and Ruddle No. 3, will you state generally how the results of all three compared one with the other?

A. The result of the No. 1, 24-degree, was a little more consistent—I wouldn't have to be so fussy about the water addition to the No. 1 as I did to No. 2 and 3. [424]

Q. I am speaking principally, Mr. Dietert, with respect to the results obtained.

A. Well, in my mind none of them were practical. I can't pass them.

Q. As respects each one, were they comparable one to each other within practical limits?

A. Oh, yes, I would group them all together and put them in one class.

Q. Now, I want to get into the record, if we can, a list of the essential characteristics of a core oil, as you have found them from your experience. In asking you these questions I will endeavor to break up the continuity, taking the periods of time. First, in the period commencing with the time the core oil is mixed with the sand and continuing up

(Testimony of Harry W. Dietert.)

to the time that the core is actually made, what core oil attributes and qualities are essential and considered necessary in core oils?

A. I would want the core oil to be in a concentrated form. The core oil should not settle out in storage. The core oil should be easy to handle and should be ready to use, and it should adapt itself to be used with dried or run-of-the-mine sand, which may be damp, wet.

Q. Have you completed your list?

A. How far did you take it, up to mixing?

Q. Up to the time the core is made.

A. O.K.

Q. I can't tell when you have finished your answer.

A. It has to be easy to mix, should require the minimum amount of cleaning of a mixing equipment. I would want core oil so it would not air-dry in the mixed sand too fast, and the core oil shouldn't settle to the bottom of the pile of the mixed sand——

Q. What was that last, please?

A. The core oil shouldn't drain or settle to the bottom of the stored pile. I am about [425] ready to make my core now. I guess I stop.

Q. What do you mean by your statement that core oil should be in a concentrated form, and in doing that, if you can tell us just briefly what you mean and why it is essential to have it, in just a few words, I think it would be helpful.

(Testimony of Harry W. Dietert.)

A. Just to avoid buying—paying freight and storing a large bulk of core oil, and so that we would not have—what a lot of our foundries have—we do now—numerous tanks where we store all our oils. Tanks are expensive, and we would like to have it in concentrated form so we would not have to buy so much of it and pay freight on so much of it and pay for handling so much of it.

Q. As a result of your experience in foundry practice, and with coremaking in particular, and as the result of your working with and experimenting with Ruddle solutions, have you any opinion as to the comparison of concentration of let us say Linoil as compared to Core-Min-Oil? A. Yes.

Q. Do you have an understanding of the words “Core-Min-Oil”? A. Yes, I have.

Q. What is that?

A. By “Core-Min-Oil” I understand a core oil that is composed of sodium silicate with these two chemicals and asphalt emulsion, used in those percentages that I have related just a few moments ago.

Q. With that understanding, will you tell me how Linoil and Core-Min-Oil compare in so far as being in concentrated form is concerned?

A. All right. I would say they would not [426] compare.

Q. You would say they would not compare?

A. They don't compare alike; they are quite different. With Linoil—there are certain cores I have in mind now—I would use a ratio of one quart of

(Testimony of Harry W. Dietert.)

oil to fifty parts of sand. If I would make that out of Core-Min-Oil I would use a ratio of one part of Core-Min-Oil to about ten parts of sand. I would end up about equal strength, and I would have to use with the Core-Min-Oil a lot of precautions to get equal strength.

Q. How about settling in storage, Mr. Dietert? What do you mean by that?

A. That is something that we experience with core oil. We look at it and we are very suspicious always that the core oil has settled, and it is an old fear that we have. We do not want the oil to settle away from the gum resin or the oil—linseed oil to settle away from the gum resin or whatever you may have. We want the materials to be the same consistency throughout, in the big storage tank or in the work.

Q. How do Linoil and Core-Min-Oil compare in that respect?

A. I would put them on an equal basis. I did not experience any settling, necessarily, with the two materials. There was some precipitate in the solution, but that was very small and we could pass it by.

Q. In making that comparison between Core-Min-Oil and Linoil, in what form was the Core-Min-Oil, one package or two packages?

A. It was in two packages, one package solution and another package of asphalt emulsion.

Q. Incidentally, just briefly, did you ever make any attempt to mix this Ruddle solution, either 1,

(Testimony of Harry W. Dietert.)

2 or 3, with the asphalt emulsion and make a ready-to-use core oil out of it?

A. Yes, I did. I did it—I found it would settle out very [427] fast. It might interest the Court to know why I did it. I thought, Well, I had better find out whether or not this material behaves the same if you make ready-to-use package or whether you use two separate packages on it. It behaved just the same.

Q. Were you successful or unsuccessful in this making ready-to-use core oil with those two ingredients that I have referred to, that is, the Ruddle solution and asphalt emulsion?

A. I couldn't make a stable solution out of them. I didn't work on it for years, but the two materials are so dissimilar that it would be a very difficult problem to find a real solution, particularly if you are going to store this material in a cold storage room where it is cold—and when these oils get cold they sure will separate.

Q. You spoke about easy handling. What do you mean when you say a core oil should be easy to handle, and why do you want it easy to handle?

A. By easy handling I mean an oil that is not too viscous—I don't want to gum up everything; I don't want to gum up the pumps that we pump oil with, and the pipe fittings where they pipe up the tanks to the tank car—we don't want that to dry around too hard, and we don't want our spigots

(Testimony of Harry W. Dietert.)

or our screwcaps to be cemented on too tight, want them to work nice.

The Court: I was hoping we would get through with this witness, that is the reason I have gone so late.

Mr. Aurich: I am sorry, your Honor, but I had planned to take this witness over this list of attributes of the core oil so that we would have a standard by which we could measure Core-Min-Oil, and there are some sixteen or twenty of them, so I don't think it is quite possible to finish tonight.

[428]

The Court: I will state to both sides in this case that starting this week—I hoped we might conclude this matter last week—it is my hope that it will be concluded here as expeditiously as possible. With that admonition we will proceed now, gentlemen.

HARRY W. DIETERT,

Resumed.

Direct Examination

(Continued)

Mr. Aurich: Q. At the adjournment of court, Mr. Dietert, and at the suggestion of the Court, did you make an inspection of any foundries in the Bay area and in Los Angeles to determine the type of ovens that were in use? A. Yes, I did.

Q. You visited the Yuba Foundry at Benicia that was mentioned by Mr. Hackley?

(Testimony of Harry W. Dietert.)

A. Yes, I did.

Q. Will you tell the Court about that, please, just briefly, as to the type of furnace and the size of the foundry.

A. At the Yuba Foundry they use one medium size Young electric oven, and this oven is substantially 7 foot by 7 foot by 9. And then the small one they have is substantially 36 inches wide and it is a four-drawer affair, and it stands about four foot high. It is not more than three foot in depth.

They have one coremaker at this foundry, and they take off a heat once a week. The heat is very small, being two to three tons a week, that is, that one heat is between two to three tons.

Q. You also visited the Warman Steel Foundry in Los Angeles, did you?

A. Yes, I was at the Warman Steel Foundry [429] yesterday.

Q. What did you find there with respect to electric ovens for coremaking purposes?

A. At Warman I found that they used one very small electric furnace. This electric furnace is a four-drawer affair, and the drawers are 32 inches wide and 54 inches in length. The whole oven would not exceed more than about 50 inches in height.

Q. Did they have any other ovens at the Warman Steel Foundry other than this one electric oven to which you have referred?

A. Oh, yes, they have two large gas ovens and then two medium sized gas ovens, in which they bake the majority of their cores. In the electric

(Testimony of Harry W. Dietert.)

oven they only bake the real small cores, and it is more of a laboratory size, as I see it.

Q. Did you visit any other foundries in the Los Angeles area to determine the type of ovens that were there in use?

A. Yesterday I visited eleven foundries in the Los Angeles area.

Q. Will you tell me how many of those foundries used electric ovens?

A. One, in addition to Warman, and that is Alloy Steel & Metal Company in Los Angeles.

Q. Now, you have mentioned something about a core oil being ready to use. Will you just explain briefly why it is necessary or desirable to have a ready-to-use core oil, and also how Core-Min-Oil compares with Linoil in that respect.

A. By a ready-to-use core oil I refer to an oil that is in a single package and is ready to use when it is delivered to the foundry and no other liquid ingredients to be added. With a single package of ready-to-use oil, you only have to purchase one material, which reduces the supervision of producing and storing. Further, with the single oil, oil in large plants, you do not have to duplicate the underground storage tanks or [430] the pumping equipment, piping, and metering system.

The single-package oil has other advantages, such as the fact that the operator at the mixer has only one ingredient to measure out, which reduces to some extent the time that is required for measuring the ingredients, which allows him to do other duties

(Testimony of Harry W. Dietert.)

while the mixer is running. You also have the advantage in single-package oil that you have only this one ingredient to measure out, which reduces the chance of error.

Q. How does Core-Min-Oil compare to Linoil with respect to being ready to use?

A. There is no comparison in that Linoil is vastly superior in this respect; that with Linoil you have one oil that is ready to use, whereas with Core-Min-Oil, I found it necessary to use it as two ingredients.

Q. Mixed just before using?

A. Mixed just before using or, preferably, really added separately into the mixer.

Q. You said something about the fact that it is desirable to have a core oil that could be usable with dried sand or with run-of-the-mine damp sand. Will you explain briefly why it is necessary for a core oil to have that characteristic, and briefly compare Core-Min-Oil with Linoil in that respect.

A. Well, in this respect the two oils are quite different, in that if you would use Core-Min-Oil with run-of-the-mine sand, you would obtain a mix that would be wet and unsuitable to use, since Core-Min-Oil contains almost enough water to temper the core mix by itself, whereas with Linoil you could use it with run-of-the-mine sand or with dry sand, which makes a much more flexible foundry operating condition.

You can use Linoil with all the types of sand that you can use Core-Min-Oil with, and when you use

(Testimony of Harry W. Dietert.)

Core-Min-Oil you cannot use that oil with all the types of sand that Linoil will work [431] with.

Q. Does it make much difference in the practical operation of a foundry whether you have an oil that can only be used with the dried sand?

A. Yes, it does.

Q. What difference does that make?

A. If you have an oil that you can only use with dried—with a dry sand, you have to go to the trouble of buying or drying the sand.

Q. Is dried sand more or less expensive than run-of-the-mine damp sand?

A. Dried sand is more expensive than the run-of-the-mine sand. For example, let us cite the Michigan, Illinois, Ohio foundry areas. There we can buy Michigan Lake sand, which is run-of-mine, for half the price that we can buy the dry sand.

Q. How is the sand stored in the U. S. Radiator Corporation today?

A. At the U. S. Radiator Corporation plant the core sand is stored under a large yard crane, stored outside subject to the atmospheric conditions. They have this because the amount of core sand that is stored is so large—at times they will have as many as fifty cars of sand in them.

Q. And I understand subject to atmospheric changes in the weather?

A. Yes, it is.

Q. You mentioned something about the fact that core oil should be easy to mix with the sand. Will

(Testimony of Harry W. Dietert.)

you tell us briefly why a core oil should have that characteristic, and compare Core-Min-Oil with Linoil in that respect, please.

A. I prefer a core oil that is easy to mix so as to save time of mixing, and have an oil at the plant that will mix with the sand where you use a paddle or muller or a kneading type of sand mixer. If the oil is difficult to mix with the sand, then the time of mixing is increased, which is expensive. And another thing, [432] you might be compelled to use the more expensive form of mixing equipment, such as the muller or the kneading machine, if the oil is difficult to mix.

My work with these two oils showed definitely that with the Core-Min-Oil, to get a good mix, particularly to get the asphalt to cover the sand grains thoroughly, it was necessary to use a muller type or kneading type of mixing equipment, whereas with the Linoil you could use the conventional type of paddle mixer or you could use this more intensive form of mixing if such were available.

Q. You also mentioned something about a minimum amount of cleaning of equipment. Will you describe what you mean by that for us, generally, and likewise compare Core-Min-Oil with Linoil so far as that characteristic is concerned.

A. By cleaning of the equipment I refer particularly to the mixer. If the oil air-dries fast, and you interrupt the operation of the sand mixer, the sand would dry in the corner of the mixer, which really compels you to clean the mixer when you interrupt

(Testimony of Harry W. Dietert.)

the operation; whereas if the oil dries slowly, you can interrupt the mixing operation and only dry your sand mixer once a day.

I found that when I mixed Core-Min-Oil in a sand mixer, it is necessary to clean the sand mixer within five minutes after the sand was dumped, or else the sand would tend to build up in the corners of the mixer. When I used Linoil I could clean the mixer at any time during the day.

Q. In that respect which do you think is the superior oil, Linoil or Core-Min-Oil?

A. Linoil is much superior in that respect.

Q. Now, you have also mentioned something about the core oil [433] settling to the bottom of the stored pile of sand. Do you consider a core oil that settles to the bottom of the sand to be a good core oil or a bad core oil?

A. I consider the core oil that settles, that drains to the bottom of the pile of stored sand or bin or bench or on the floor, is a bad core oil.

Q. Why is this settling of the stored sand, as you described, a disadvantage?

A. When the oil bond settles, it drains to the bottom of the pile or bin, and that causes the top of the sandpile to contain an insufficient amount of oil binder, whereas the bottom of the sandpile would contain an excess amount of oil binder. The cores made from the top of the sandpile would be too weak, while the cores made from the bottom of the pile would be too strong. This variation in strength certainly would cause an increase in scrap.

(Testimony of Harry W. Dietert.)

Q. Have you any opinion as to the merits of Core-Min-Oil and Linoil with respect to the drainage that you have referred to?

A. Yes, I have very definite opinions which I formulated from actual test. In this test I made up two batches of sand; one was bonded with Core-Min-Oil and the other was bonded with Linoil. I placed both of these sands in separate airtight containers and stored them for five hours. After the five-hour storage period, I made cores from the top, the center and the bottom of the container, baked them, allowed them to cool, and then determined the tensile strength.

Mr. Hackley: If your Honor please, the witness is testifying from notes. I object to notes unless they are identified.

Mr. Aurich: I will identify them for you.

Q. What notes have you in front of you, Mr. Dietert?

A. I have here notes of the work that I did with Linoil and [434] Core-Min-Oil cores. They are my daily reports. I recorded operations, observations and test results, and also summarized my work on sheets.

Q. If I understand you correctly, you kept daily records of all work done by you, and then subsequently had them typed and placed into the form in which they now appear in your book?

A. Yes, I did.

Mr. Aurich: Do you wish to inspect the book, Mr. Hackley?

(Testimony of Harry W. Dietert.)

Mr. Hackley: I won't interrupt your direct examination, but I would like to before I cross examine.

Mr. Aurich: Q. Will you continue your answer, please, as to what you found with respect to the drainage of core oils from the sand.

A. In the case of Core-Min-Oil, the cores that were made from the top of the container were 17.9 per cent weaker than the cores made from the bottom of the pile, showing a considerable amount of drainage of the Core-Min-Oil to the bottom of the pile.

With Linoil bonded sand, the cores made from the top of the container were only $21\frac{1}{2}$ per cent weaker than the cores made from the bottom of the container.

Q. I take it from your tests, then, that you are of the opinion that Core-Min-Oil is not as satisfactory as Linoil in respect to the drainage?

A. That is true.

Q. Can you tell me some of the core oil attributes and qualities that are essential and required during the period of time while the core is being made and up to the time of baking?

A. First, the oil should not impair the flowability of the sand. Second, it should lend itself to green strength control. Third, oil should not cause excessive sticking in the core box. Fourth, the oil should not air-dry rapidly, causing the sand adhering [435] to the surface of the core box to harden.

(Testimony of Harry W. Dietert.)

Fifth, it should be clean and pleasant to handle. Sixth, it should lend itself to booking and patching.

Q. Now, why should a core oil possess the degree of flowability that you referred to, and, generally, how does Core-Min-Oil compare to Linoil in that respect?

A. By flowability I mean the ease with which sand rams into restricted parts of a core box. In this respect the two oils do not differ greatly; they are quite similar. One thing, however, that is worthy of noting is that the moisture content of these sands must be held at a definite value. In the case of Core-Min-Oil, if the Core-Min-Oil loses any of its water, it gets sticky, and then it starts sticking in the core box. And Core-Min-Oil sand has a tendency to lose its water very fast. That is not necessarily true of Linoil sand.

Q. How does Core-Min-Oil compare with Linoil generally with respect to this disadvantage of sticking to the core box that you mentioned?

A. I did not find much difference, providing the two sands, namely, Core-Min-Oil sand and Linoil sand, were correctly tempered for nice working and ramming. However, Core-Min-Oil loses its moisture fast, as I mentioned before, and becomes sticky and causes sticking, so we have to take special precautions with Core-Min-Oil sand to keep it correctly tempered so it won't stick.

Q. What do you mean by "green strength control"? What does a coremaker want in a core by way of green strength control?

(Testimony of Harry W. Dietert.)

A. By "green strength" I refer to the green bond of the core mixture immediately after the core is removed from the core box. I find it very desirable to have a core mixture that is constant in its green strength. When we have an oil that is [436] constant in its green strength, it enables us to add definite amounts of green strength in parting material. The green strength of Core-Min-Oil sand and Linoil sand are quite similar, providing the moisture is held at the temper point.

Q. That is the same precaution that you mentioned a few moments ago that you must take when working with Core-Min-Oil?

A. That is right.

Q. Now, what happens when you have a core oil that air-dries rapidly, in so far as work with the bonded sand on the coremaker's bench is concerned?

A. When an oil causes a sand to lose its moisture rapidly, why, the sand becomes sticky on the bench and it crusts over on the corners of the bench, and where he is not using the sand continually, he has to take time to keep the sand scraped together and used up continually, which slows him up.

Then there is another disadvantage in that these fast air-drying oils will cause a sand to harden to the sides of boxes if he just sets them aside for a little while. And this hardening means he has to clean his boxes every time he stops his operation, even during lunch hour, whereas with Linoil core sand, which does not air-dry fast, and you can clean

(Testimony of Harry W. Dietert.)

your box, say, an hour or so after you have used it, you can set the box aside and start on something else and then come back to the box. You do not have to worry so much about its drying hard to the sides of the box.

Q. Do you consider that a serious disadvantage in a core oil, Mr. Dietert? A. Yes, I do.

Q. Did you make any comparative tests to determine the rate of air-drying of a core sand bonded with Core-Min-Oil and a core sand bonded with Linoil?

A. Yes, I made several tests: [437] One test I thought was particularly practical, and that is I took a pile of sand that was bonded with Core-Min-Oil and then a pile of sand which was bonded with Linoil. I came back within a hour's time, and they were stored side by side, and the pile of sand bonded with More-Min-Oil crusted over the entire surface of the pile to a depth of one-eighth of an inch, whereas in the case of the Linoil bonded sand, I found no appreciable crustation at all.

Q. What would one have to do after returning to the exposed bonded sand and finding a crust there of, say, one-eighth of an inch thick, if you wanted to use the sand?

A. He would have to take time out to remove the hard crust of sand, or it would be mixed in with the sand, and these crusts or lumps of sand would show on the surface of the core box, which would be a great disadvantage in that you would have a porous box there.

(Testimony of Harry W. Dietert.)

Q. You have also mentioned a core oil should be clean and pleasant to handle. Is that something that has been noticed more particularly in the last few years?

A. Yes, in the recent few years, foundries have been beginning to appreciate good housekeeping, and they require an oil that is clean and pleasant to handle. In addition to that, coremakers are beginning to demand that the oil be clean and pleasant to handle.

Q. How does Core-Min-Oil compare with Linoil, for example, in that respect?

A. Absolutely no comparison.

Q. Which is the cleaner of the two?

A. The Linoil is by far the cleaner of the two, and it is quite pleasant to handle. It does not air-dry quickly to your hand; it does not smart or bruise on your hand. It is a vegetable oil which is really quite good for the skin of your hand, whereas the Core-Min-Oil, that material, when you work with it and are through ramming [438] your box, and you hold your hand up to the air a fraction of a minute on a dry day, it dries on your hand; it gets sticky and the asphalt gets under your fingernails, in the pores of your skin, and I found that when I was making cores with Core-Min-Oil I always had a tendency to wash my hands quite frequently, and that is washing the oil out of your hand. I could work a half day with Linoil and it wouldn't be unpleasant at all.

(Testimony of Harry W. Dietert.)

Q. Now, you have mentioned something about ease of booking and patching. Will you explain just generally what you mean by "booking and patching," and then if you can, in a very few words, tell us how Core-Min-Oil compares with Linoil in that respect.

A. By "booking" I mean molding together two core boxes, or a core box and a drier, and removing the core box, and we like to have the sand knit nicely.

In the case of Linoil, it is easy to book, whereas the Core-Min-Oil, I have found difficulty in booking. And I believe the booking disadvantage comes in from the flash air-drying surface of the core when booked together.

In the case of patching, you can patch both the cores, but with Core-Min-Oil sand you have to patch right away, otherwise the core dries and it is not patched or slick, nice. With Linoil you do not have to be in a particular hurry. If you build up a large core from Linoil sand, you can build on, but I do not think you can do that well with Core-Min-Oil; it dries.

Q. Can you name some of the desirable characteristic qualities of a core oil required by a foundryman in proportion to the operation, say, from baking to shaking out?

A. First, the core oil should lend itself to easy baking with reference to time of baking and temperature. Second, the oil should not be sensitive to the atmosphere within the oven. Third, it should

(Testimony of Harry W. Dietert.)

[439] have sufficient warm strength. Fourth, it should not stick excessively to the drier or core blade. Fifth, it should not rapidly absorb moisture during storage. It should have a minimum gas content. Next, it should possess ample strength and at the same time possess collapsibility. And last, it should have no retained strength, that is, it should burn up or shake out easily.

Q. We will discuss those characteristics one by one, Mr. Dietert. Taking the first, easy to bake, that you mentioned, just generally what do you mean by "easy to bake," and how do cores made with Core-Min-Oil compare in that respect with cores made with Linoil?

A. By "easy to bake" I refer particularly to an oil that is not oversensitive to temperature of baking or oversensitive to time in which it was baked. Certain oils you can bake heavy and light sections with quite a range in the same oven. These same oils generally allow you to bake heavy sections that will pour thoroughly and yet not have the corners of the core or the thin core prints or projection overbaked. Time of baking of Core-Min-Oil cores is faster than Linoil cores, providing the section is not over, say, one inch thickness. Then he can bake a Core-Min-Oil core in a third of the time. But as you increase the size of the core, the speed of Core-Min-Oil baking is materially reduced. When you reach a section of core seven inches in thickness, I had to bake the Core-Min-Oil cores the same length of time that I had to bake the Linoil cores. The

(Testimony of Harry W. Dietert.)

Core-Min-Oil core, however, was really more difficult on seven-inch-thick cores. It would skin-dry on the outside, but it was very difficult to get to the inside. In other words, I found it was more erratic in baking than Linoil, and I have every reason to believe that if you had a core that is twelve [440] inches thick, that I could bake such a core more easily and more thoroughly out of Linoil than I could with Core-Min-Oil.

Q. How do cores made with these two core oils, namely, Core-Min-Oil and Linoil, compare with respect to consistency of baking?

A. I found that the Linoil cores were more consistent than the Core-Min-Oil cores. The edges of the Core-Min-Oil cores would overbake quite easily, and you had to watch it to get good firm edges. If you overbaked it a little bit, the edges would get soft, even if you baked them in controlled atmosphere. Whereas the Linoil core, I would bake a heavy chunk, and I would have the edges come out nice and hard, and the prints are strong. The Core-Min-Oil core gets kind of glass-hard. It is brittle hardness or strength. [441]

Q. How did the cores baked with Core-Min-Oil and Linoil compare with respect to the sensitivity of atmosphere in the furnace?

A. Absolutely no comparison here. Linoil is much superior. I can bake a Linoil core in a wide variety of atmospheres and not experience any harmful results, whereas with Core-Mine-Oil cores, any fumes from the fuel are very detrimental.

(Testimony of Harry W. Dietert.)

Q. Now, you have mentioned something about the fact that a core should have sufficient warm strength. Will you describe briefly what you mean by "warm strength," and why it is necessary that a core have that characteristic?

A. The warm strength that I refer to in my work is the strength of the core when it is at 140 degrees temperature. In other words, it is still warm. It is desirable to have a good warm strength, because in many of our foundries we rap out our cores from the drier, off the drier blade while it is still warm. In fact, many plants provide gloves to the men that rap out the cores. Now, if you did not possess good warm strength, you would experience a lot of breakage, whereas if it has sufficient warm strength, why, you would have a minimum of breakage at this point.

Q. In other words, sufficient warm strength, or warm strength generally, is something you want in a core, and not something you do not want, is that correct?

A. You want sufficient warm strength. It is a very vital factor.

Q. Did you make any test to determine the warm strength of cores made with Core-Min-Oil, and also cores made with Linoil? A. Yes, I did.

Q. Will you give us the results of those tests, please?

A. Linoil has a warm strength of 36 pounds, whereas the 24-degree Baume Core-Min-Oil cores

(Testimony of Harry W. Dietert.)

have a warm strength that would range in the low 40-pound strength—42.6, 42.8, and so on. [442]

However, when you used Core-Min-Oil that contained a higher percentage of asphalt than the 24—I refer now to Core-Min-Oil 30-degree Baume solution, and Core-Min-Oil with the 32 Baume solution—these are fairly high asphalt—in which case the hot strength was low; for the 30 I only obtained around 22 pounds; with the 32 it came to 29, meaning that Core-Min-Oil cores made with a high asphalt content are in the upper limit as set forth; in the 30 and 32 Baume solution the warm strength is really low, now, which is quite natural to explain.

Q. Have you completed your answer?

A. I have completed it.

Q. I did not mean to interrupt you. If I understand you correctly, in the Core-Min-Oil the sodium silicate solution, or Ruddle Solution, is the thing that gives the cores strength, while the asphalt emulsion is the thing that causes core to have collapsibility; is that generally true?

A. That is the general truth.

Q. And the more asphalt you add, the lower the strength of the core?

A. That is right.

Q. Now, you have mentioned something about moisture absorption. Can you described what you mean by moisture absorption, and compare cores made with Core-Min-Oil and cores made with Linoil in that respect, and if you have any test data upon which to predicate your answer and your opinion and conclusion, will you let us have it, please?

(Testimony of Harry W. Dietert.)

A. I made three different types of determination: one is where I placed cores of Core-Min-Oil and cores made with Linoil in a mold. I would leave the cores in the mold a certain length of time, then I would take the cores out, and I would determine the strength and hardness. It was done in a foundry.

Another series of comparisons made were placing cores made [443] from these two different core oils under discussion, placing the cores in a humidor to check the moisture absorption. And I also placed the cores made from these different oils out in the room and let it set for awhile. And I like my test where I place the cores in the mold better; I think it is the real practical one.

Q. That is at the foundry?

A. It is in the foundry, and it illustrates the rate at which these cores soften. Now, when I placed a Core-Min-Oil core in a mold for $16\frac{1}{2}$ hours, I found loss of strength of $82\frac{1}{2}$ percent. In other words, they lost $82\frac{1}{2}$ percent of their original strength.

Q. What type of core was that?

A. That was a Core-Min-Oil core with 24 Baume solution. It did not make much difference whether you used a 30 or 32 Baume. The results are all up in the 80s. While with the Linoil cores placed in the mold the same length of time, in the same mold, I lost only 58 percent of the original strength.

Q. You think that is a fairly accurate way to test the moisture absorption of the core?

A. I do.

(Testimony of Harry W. Dietert.)

Q. Why did you test the moisture absorption of these cores by first placing them in molds?

A. Because that is exactly what would happen in a foundry. You would place the cores in a mold and you would not have iron right away to pour in them at the foundry. So the cores would have to remain strong so it would not bend between the chaplet supports, and so the core surface at the chaplet supports would not get soft. If it became soft in the mold, you would lose a metal thickness. It would raise up core-raises and other casting defects.

Q. Then, in your opinion, I take it, Linoil is far superior to Core-Min-Oil with respect to moisture absorption?

A. Yes, Linoil is vastly superior to Core-Min-Oil in moisture [444] absorption, whether taken in storage, in the humidior, or in the mold.

Q. I was just going to ask you, did your tests that you formed when you used the humidior give you substantially the same results as the tests which you have described when you used the mold at the foundry?

A. Surprisingly close. For example, with Core-Min-Oil, 24 Baume, in a humidior, 88 percent; Linoil, 61 percent.

Q. Now, you have mentioned something about gas content. Will you describe whether you want a gas content in a core, or whether you do not want a gas content in a core, and briefly tell us why, and then make the comparison between cores made with Linoil and cores made with Core-Min-Oil?

(Testimony of Harry W. Dietert.)

A. In a foundry we desire a core with a minimum gas content. I find it best to actually measure the gas content of a core with measuring equipment, and in this determination we take a piece of the core and put it into a furnace at 1800 degrees Fahrenheit and burn it up completely. We measure all the gas that that core gives off in cubic centimeters of gas per gram of core.

This type of test was made on Core-Min-Oil cores and on Linoil cores. I found that the Linoil had slightly less total gas content than the Core-Min-Oil. For example, the Linoil core possessed a gas content of 12.25 cubic centimeters of gas per gram of core that was burned, whereas the Core-Min-Oil core showed a gas content of 17.25.

It may interest the Court to know that most of this gas came from the emulsion. I made up cores with just emulsion and obtained a gas content from the emulsion of $13\frac{1}{2}$ centimeters. The Ruddle Solution does not contain much gas—only four cc's. Add those together and you get $17\frac{1}{2}$ cc's of gas. That is independ- [445] ently. Now, if I take the Core-Min-Oil core itself, I get $17\frac{1}{4}$. It checks very close.

Q. When you used emulsion in your last answer, Mr. Dietert, you were referring to asphalt emulsion?

A. I was referring to the Shell Y-104 asphalt emulsion.

Q. Will you give us the figure, please, of the gas

(Testimony of Harry W. Dietert.)

content for the Linoil core? Mr. Hackley did not get that figure. A. 12.25.

Q. I want to refer again, just for a moment, to the moisture-absorption-of-oil discussion. Is the moisture absorption or strength of loss of a core made with Core-Min-Oil affected by sodium fluosilicate and aluminum sulphate additives of the Ruddle Solution?

A. The moisture absorption is not affected when you make Core-Min-Oil cores with or without sodium fluosilicate or aluminum sulphate.

Q. Now, in that connection also, in general foundry practice, how long a period of time must a baked core remain hard and useful?

A. That would vary in different foundries. Most foundries would want their cores to be useful, at least have a minimum of two days, and if you store the core for two weeks, it still should be useful, whether it is raining or whether it is dry weather.

Q. Now, you mentioned that the core should possess sufficient strength and at the same time have the required degree of collapsibility. Will you tell us what you mean by that, and how cores made with Linoil compare with cores made with Core-Min-Oil in that respect?

A. By collapsibility I mean the rate at which the core burns or disintegrates within the casting after the metal is poured. If the core collapses at too slow a rate, then we place the solidifying metal and cooling metal under strain. I know from actual experience that certain castings will heat-crack or

(Testimony of Harry W. Dietert.)

strain due to the fact that the cores did not collapse fast [446] enough. It would be interesting just to relate how we make this test in the laboratory to duplicate the foundry condition. We take a core specimen and insert it in a furnace which is at the pouring temperature of the molten metal. Our furnace will go up as high as 3,000, so you can measure it for steel, gray iron bars, aluminum, magnesium, or whatever metal you are using. These cores are put in this furnace at the temperature at which you pour the molten metal. On top of the core you place a quartz rod, which loads the core to a load of four ounces per square inch. On the upper end of this quartz rod is located a dial indicator. You measure the time with a stop watch that it takes that core to collapse under that heat. As a rule, we use 2,500 degrees Fahrenheit for gray iron work, feeling that is the temperature of the molten metal around the core. That is the afterate temperature. As soon as that core collapses, why, you see the quartz rod come down and the indicator spins around. If it collapses in a minute and a half, completely collapses in a minute and a half, then I say that oil is very fast in collapsibility; whereas if it collapses in seven or eight minutes, it is slower in collapsibility. If it goes in twelve minutes time, we say it fails to collapse. At the end of this twelve-minute period we apply a load to the core which is within this furnace at this high temperature, and actually measure the strength of the core at that temperature, that is, hot strength.

(Testimony of Harry W. Dietert.)

Now, in comparing the two cores made from Core-Min-Oil and Linoil, the Linoil core will collapse in two and a half minutes for the type of sand we use; with the same sand, but using Core-Min-Oil, the core specimen fails to collapse in the twelve-minute period of time. In other words, the Core-Min-Oil cores do not collapse readily enough for fast production work, and considerable [447] effort would be required to remove the core from the casting further.

Mr. Aurich: Q. Just prior to the recess, Mr. Dietert, we were speaking of the required degree of strength that a core must possess and still have requisite collapsibility. Will you state whether you were ever able to make a core with Core-Min-Oil that had sufficient room strength and at the same time possessed the sufficient degree of collapsibility?

A. I never was able to make a Core-Min-Oil core that possessed sufficient room strength that would collapse satisfactorily.

Q. I hand you a core and ask you to tell the Court what, if anything, you had to do with it; how it was made, and what caused it to be in the form in which it now is?

A. This originally was a Core-Min-Oil core made with 32 Baume solution. It was heated in our furnace unit, which we call a dilatometer, at 2,500 degrees Fahrenheit, for a period of 12 minutes, and it failed to collapse, as you can see.

Q. Instead of being in the form in which it now is, how should it have been?

(Testimony of Harry W. Dietert.)

A. It should have formed a little sand in the bottom of the pan of the dilatometer.

Q. In other words, it should not have been in the form of a core? A. That is right.

Mr. Aurich: I offer the core identified by the witness, for the purpose of illustrating his testimony, and ask that it be marked Defendants' Exhibit DD.

Mr. Hackley: I assume all this testimony is in the nature of what Mr. Aurich termed ex parte tests, referring to similar tests [448] of my witnesses, which are under the motion to strike.

The Court: It is in evidence.

Mr. Hackley: I object to the offer in evidence of the sample on the ground that it does constitute an ex parte test without notice to the opposite party.

The Court: It illustrates this witness' testimony.

(The core referred to was marked Defendants' Exhibit DD in evidence.)

Mr. Aurich: Q. How would you remove a core made with Core-Min-Oil that was as hard as Defendants' Exhibit DD, that is, remove it from the casting?

A. It would be necessary to use some sharp tool and hammer, or pneumatic tool, to remove cores of that nature from the castings.

Q. Now, you have mentioned something about retained strength, speaking of characteristics of core oils. Is retained strength something you want in a core, or something you do not want?

(Testimony of Harry W. Dietert.)

A. Retained strength is something we do not want.

Q. How do cores made with Core-Min-Oil compare with cores made with Linoil in that respect?

A. There is no comparison. Now, a Linoil core, when heated to temperatures above a thousand degrees, will disintegrate, whereas a Core-Min-Oil core, you can heat it up to 2500 degrees, and it still does not disintegrate or fall apart.

Q. What is the result of the high retained strength in Core-Min-Oil cores?

A. The result of the high strength of Core-Min-Oil cores is that [449] the core is difficult to shake out in the cleaning room.

Q. Have you actually experienced this difficulty yourself in working with Core-Min-Oil cores?

A. Yes, I have, and I have two comparisons that I would like to offer. I made Core-Min-Oil cores from the 30-degree solution, made the castings, poured them, took them from the mold, and then endeavored to shake them out. This 30-degree Baume solution core was very weak; it was too weak for satisfactory foundry use—strength weak. I refer to room temperature. Nevertheless, after a careful handling of the core, I was successful in putting the cores into molds, pouring them, removing the casting, and in the cleaning room I found that a fair comparison would be that the Core-Min-Oil cores required twice the effort that the Linoil cores required. Now, that was really an unsatisfactory core from a foundry production standpoint.

(Testimony of Harry W. Dietert.)

The shakeout was unsatisfactory, and the room temperature strength was unsatisfactory.

So the next move was to make a core that had this satisfactory room temperature strength from Core-Min-Oil, using the 24-degree solution, that is, a strength that I term satisfactory for foundry use. Likewise applied to castings and shakeout of the core. I used a simplicity shakeout machine, which is a mechanical vibrating table. The Linoil cores would shake out in less than a minute's time, whereas the cores made from the Core-Min-Oil would not shake out on this mechanical unit in ten minutes. The fact of the matter is, they did not even begin to shake out in ten—strike that—in five minutes' time. Five minutes was the limit that I let the castings remain on the shakeout unit.

In this last comparison, the Linoil cores and the Core-Min-Oil cores, after they were baked, had the same strength.

Q. Is the fact that the Core-Min-Oil cores did not commence to [450] shake out after five minutes on the shakeout machine, whereas the Linoil cores did shake out after one minute, a matter of any importance?

A. Yes, it is a very important factor.

Q. For example, do you know of any foundries that operate a shakeout machine on a conveyor system?

A. I knew any number of them. For example, Caterpillar, Pontiac Foundry, and so on.

(Testimony of Harry W. Dietert.)

Q. How do these vibrating shakeout machines operate on the conveyor system?

A. Well, take Pontiac Foundry, for example: The castings are snaked out of the mold with an air hoist, placed on a conveyor, and in this conveyor is located a mechanical shakeout table. The castings go along, slide from the shakeout table, which is set at an angle, and they are on that shakeout table for less than a minute's time, in some cases, and in case the core sand would not be removed, it would require additional labor; the castings would pile up around the shakeout machine, and the first thing you know you would stop the whole system.

Q. During all of these times you were working with Core-Min-Oil and Linoil that you have been describing, where were the cores made?

A. The cores were made at the United States Radiator Foundry, and also a large number of cores were made in my own laboratory.

Q. Did you ever bake any cores in the direct-fired oven of the United States Radiator Corporation?

A. Yes, I did.

Q. What was the result of cores so baked by you when you used Core-Min-Oil?

A. Of very inferior quality. [451]

Q. Did you attempt to pour any castings from any of the cores made with Core-Min-Oil?

A. I attempted to, but I did not, because I classified all these cores that were baked in a direct-

142 *Egyptian Texts and Amen D. M. M. M.*
(Testimony of Harry W. Dietert.)

fired oven at the United States Radiator Corporation as unsatisfactory and unsuitable.

Q. Did you make any cores in your laboratory and bake them in your electric oven for use in the foundry?

A. Yes, I baked a large number of cores in the electric furnace in my laboratory for use in the mold.

Q. Can you tell us how many cores you made for the foundry?

A. For the foundry? I made a total number of 59 cores.

Q. Of those 59 cores how many were acceptable for casting purposes?

A. Twenty, which gave me a core loss of 66 per cent.

Q. Have you prepared a sheet showing the number of cores made by you for the foundry, a general description of the cores, type of baking, and other information? A. Yes, I have.

Q. Is that the sheet that I now hand you (handing document to the witness)?

A. This is the sheet which I compiled from daily notes, summarizing the result of cores that I made for the foundry.

Q. And that is taken from your daily record, is it? A. It is.

Q. Does it correctly set forth the work done by you, type of oil used, and other data that appears on the sheet? A. Yes, it does.

Mr. Aurich: In the interest of shortening the

(Testimony of Harry W. Dietert.)

trial, your Honor, I will offer this sheet identified by the witness, which is entitled, "Cores Made For Foundry, Summary Sheet," in evidence, and ask that it be marked Defendants' Exhibit EE.

Mr. Hackley: Are these tests which were made only at the radiator company, Mr. Aurich? [452]

Mr. Aurich: Well, I will ask the witness after the document is received. [452-A]

Mr. Hackley: I will object to the document as irrelevant and immaterial, for the reason that it merely refers to ex parte tests which have no probative value in a proceeding of this character.

The Court: It may be marked. Objection overruled.

(The document referred to was marked Defendants' Exhibit EE in evidence.)

Mr. Aurich: For your Honor's benefit, I might state that this sheet indicates the core oil that this witness used, type of mixing, number of cores made, and all that sort of information.

Q. I notice on Defendants' Exhibit EE, under the heading of "Oven Type," there appear the words "Direct" and, on occasions, "Indirect." What significance do those words have?

A. Cores that were baked in a direct-fired oven are marked "Direct," and where I have the term "Indirect," the cores were baked in an indirect-fired oven at my laboratory, which was heated by electricity.

Q. In other words, all the cores referred to on

(Testimony of Harry W. Dietert.)

Defendants' Exhibit EE opposite the word "Direct" under the heading "Oven Type" were cores baked at the United States Radiator Corporation or the Acme Foundry? A. That is true.

Q. And where the word "Indirect" appears, it indicates those cores were made, or baked, I should say, in your electric oven at your laboratory?

A. That is correct.

Q. Can you tell us approximately how many cores you made with Core-Min-Oil all told, taking the laboratory work and the actual work, for the foundry?

A. Yes, I made a rough count, and it totaled up to four hundred—for the foundry?

Q. That is right.

A. Totaled fifty-nine cores. [453]

Q. No, I mean total of all the cores made by you, Mr. Dietert, including those you made for the foundry.

A. Oh, yes, for the foundry. May I have that question read?

(Question read.)

A. My rough count was 456 cores, total number of cores made with Core-Min-Oil.

Q. Now, as a result of your work with Core-Min-Oil, and based upon your experiences in the art of core-making and foundry practice in general, is the Ruddle Solution made up according to either of the three formulas that you have referred to suitable for use as a core wash?

(Testimony of Harry W. Dietert.)

Mr. Hackley: I object to the question, your Honor, on the ground that as far as I recall, there has been no foundation laid for the discussion of core wash by this witness. I think this is the first time the words have been used with this witness.

Mr. Aurich: The witness is a thoroughly trained man in the art of foundry practice.

The Court: The core wash has to do with the outside of the core before it is used?

Mr. Aurich: Yes, your Honor.

The Court: Proceed.

A. I would consider the ingredients of Core-Min-Oil unsatisfactory for core wash.

Mr. Aurich: Q. Will you give us some of your reasons, briefly, for your opinion in that regard.

A. Core-Min-Oil contains sodium silicate, which is very hungry for water, moisture, and the wash on the core would soften quite rapidly in the mold, or even when the cores were stored. Another point, on the core wash we are not after a flint-hard surface. It is well known now that we want the core wash to be a little softer [454] than the core surface on which it is applied. If this wash is too hard, flint-hard, then it will spall when it is suddenly heated by the molten metal. By spalling I mean the core wash would flake off from the core.

Another point I would like to bring out is that in a core wash I like a material that is refractory. Sodium silicate is not a refractory material.

Q. Now, in your answer, Mr. Dietert, you referred to Core-Min-Oil. Did you mean a core oil

(Testimony of Harry W. Dietert.)

composed of what we have termed Ruddle Solution and asphalt emulsion, or did you just mean the Ruddle Solution?

A. I refer to both. My answer applies to the Ruddle Solution by itself, or to the combination of Ruddle Solution and asphalt.

Q. Will you state whether or not the use of Ruddle Solution, or Core-Min-Oil, as a core wash would result in the disadvantages that you have mentioned a moment ago of a core wash?

Mr. Hackley: I object to this, your Honor, as entirely speculative. I have not heard this witness even yet say he tried a core wash, made one, had any tests at all.

The Court: You can answer it; proceed.

The Witness: May I have that question so I may answer it correctly?

The Court: You had better reframe the question.

Mr. Aurich: I will reframe the question.

Q. You have described to us certain things that you said you did not have in a core wash, or that you did not want the core to have after a core wash had been applied to it. Will you state whether or not the Ruddle Solution would result in the core having those disadvantages that you mentioned?

Mr. Hackley: Same objection, if your Honor please. [455]

The Court: Let him answer it.

A. I would have the same objections to Ruddle

(Testimony of Harry W. Dietert.)

Solution, and it would have the same disadvantages when used as a core wash.

Mr. Aurich: Q. As a practical man skilled in the art of foundry practice, and particularly the are of coremaking, what if any commercial utility do you find in Core-Min-Oil when used either as a core wash or a core oil?

Mr. Hackley: I object to the question as calling for the conclusion of this witness and without proper qualification or foundation.

The Court: The objection is overruled. You may answer it.

A. I find no commercial utility for Core-Min-Oil or its ingredients.

Mr. Aurich: Q. As a practical man engaged in working in foundries, how much would you pay for the exclusive right to use Core-Min-Oil either as a core oil or as a core wash, over any given period of time, from one to five years, let us say?

Mr. Hackley: I object to that as calling for the conclusion of the witness, for which there has been positively no possible qualification made.

The Court: Do you mean what he might have paid for an article that was of no value?

Mr. Aurich: That is right, your Honor.

Q. Are you employed or retained by any concern manufacturing core oils today?

A. Yes, I am; by the Aristo Corporation of Detroit. They furnish the base oil for the Houghton core oil.

(Testimony of Harry W. Dietert.)

Q. What is lycopodium, and will you spell it for the purpose of the record, please?

A. Lycopodium, l-y-c-o-p-o-d-i-u-m, is a parting dust that is obtained from the pollen of moss. This moss is the Russian moss or seaweed, and it is imported from [456] Russia, and the parting is very expensive and used only on very expensive jobs, such as ornamental castings and pattern castings.

Q. I show you a casting which has heretofore been marked Defendants' Exhibit V. Do you recognize that casting?

A. Yes, I do. There is a number 714 (indicating).

Q. Did you have anything to do with it?

A. Yes; I made the casting and the core for it.

Q. What sort of core oil did you use?

A. I used Core-Min-Oil for making this core, and it was baked in an electric oven.

Q. Do you consider that a good casting or a bad casting?

A. I wouldn't know at this time, because the casting has not been cleaned. I would have to see the inside of the casting, see how the core shook out, and so on.

Q. Is the core that is contained in the casting Defendants' Exhibit V a good or a bad core?

A. I consider that as a bad core.

Q. In connection with that——

The Court: Q. Why do you consider that a bad core?

(Testimony of Harry W. Dietert.)

A. Because it does not shake out. If that was a good core, the sand would begin to run out and I would have to pay less labor to get the sand out of that casting.

Mr. Aurich: Q. You have mentioned some work that you have done with core oil made up of what we have termed Mr. Ruddell's solution and asphalt emulsion. In connection with your work in that regard, did you do any work with a core oil composed of straight sodium silicate solution and asphalt emulsion? A. Yes, I made cores.

Q. And, generally speaking, will you state how cores made with sodium silicate and asphalt emulsion compared with cores made with Ruddell solution and asphalt emulsion?

A. From all [457] practical standpoints they were identical.

Mr. Aurich: That is all.

Cross Examination

Mr. Hackley: Q. You have referred to Houghton Oil. Just what is Houghton Oil?

A. Houghton Oil is a core oil that is composed of polymerized mineral oil, a little thinner, and a vegetable drying oil, the choice of the vegetable drying oil depending upon the market.

Q. What are the actual oils that go to make up what you call Houghton Oil?

A. The mineral oil is a special treated oil by a process that is kept quite closely held, and this oil we pass on before it is shipped to the E. F.

(Testimony of Harry W. Dietert.)

Houghton Company of Philadelphia. They mix this special treated mineral oil, which dries very much like a vegetable drying oil. With vegetable oils, as I mentioned previously, it all depends on how the market is. Quite frequently they will use perilla and linseed. They may use soy bean oil, because this polymerized mineral oil acts as a catalytic agent to speed up the drying of the other oils that they mix with it.

For example, they can add it to soy bean oil. They can make the soy bean oil dry fast. Ordinarily soy bean oil is slow drying, and they can vary the speed of drying of this mineral oil so it speeds up the drying of it or retards it.

Q. Approximately what is the percentage of vegetable oil as against the mineral oil in the mixture?

A. That varies as [458] to the market. Whenever the vegetable oil markets, as they are now, get too expensive, why, they will use more mineral oil. If this mineral oil gets short, if there is a shortage of this mineral oil, why, they will use more vegetable. It is a compounded oil that lends itself to using different ingredients, and there is no set percentage that they work on. It is a good oil.

Q. Do you have any range established for the vegetable oil in comparison with or contrast with the mineral oil?

A. I do not believe that I could give you those exact ranges.

(Testimony of Harry W. Dietert.)

Q. Can you give us a general idea of what the range is?

A. Let's say about half and half, excluding the thinner.

Q. Did I understand you to testify that you had never testified in a lawsuit before as an expert?

A. That is right.

Q. Is this your first experience on the witness stand?

A. Yes, that is right.

Q. You testified to the making of cores with various formulas which you have described as Core-Min-Oil. If I understood the last answer you gave on direct examination, you referred to the making of cores with sodium silicate; is that correct?

A. I did not say that.

Q. Well, I do not know that I understood that last answer, and I would like to have you explain it. Do you remember the question and answer? If not, I will have the reporter read it.

The Court: Well, if you remember it, you propound the question to him, the thing you have in mind.

Mr. Hackley: I will follow the suggestion of the Court and ask this question and withdraw the previous question:

Q. Did you ever make any cores with a core oil in which sodium silicate was an ingredient, other than the cores referred to in [459] your testimony, which were made with what you have called Core-Min-Oil?

A. As I have stated, I have made cores with

(Testimony of Harry W. Dietert.)

sodium silicate, with the Ruddle solutions, with the Ruddle Solution, and with the Core-Min-Oil that is under discussion. I have left out the chemicals, not put the chemicals in as the patent states.

Q. Then you did make cores with sodium silicate, asphalt emulsion and sand only, is that correct?

A. Sodium silicate, asphalt and sand only? That is correct.

Q. During the course of these tests, in which you were instructed to make certain tests of Core-Min-Oil, is that correct?

A. That is correct.

Q. Have you any notes or memoranda of the results of your work with the sodium silicate product, that is, sodium silicate, asphalt emulsion and sand only?

A. Yes, I can show you the results.

Q. Were these tests made in some effort to perform experiments under the terms of one of the Ruddle patents that you just referred to?

A. My sole effort was to find out how much each ingredient of the so-called Core-Min-Oil imparted to the physical properties of the core oil.

Q. I do not think you understand my question. Will you read the question, Mr. Reporter.

(Question read.)

A. They were made during that time that I was working with Ruddle Solution, as set forth in the patent I was shown Friday.

(Testimony of Harry W. Dietert.)

Q. Which patent do you have reference to? And I hand you patents Plaintiffs' Exhibits 1, 2 and 8, which compose the two Ruddle and the Ruddle-Spotswood patents (handing exhibits to witness).

A. I refer to patent No. 2,193,346. [460]

Q. What particular part of the patent do you refer to as a basis for your testimony?

A. On page 2, paragraph 10.

Q. Lines—does it give the line number there?

A. No line number given that I see here, just paragraph numbers.

Q. Are you referring to the formula appearing on the top of the second column of the patent that you have just named?

A. That is the formula I used and refer to at the present time.

Q. Is that what you meant when you said you made sodium silicate cores under one of these patents?

A. I did not make the sodium silicate core under this patent; it was outside the patent, as far as that goes. I used the proportions as shown in that patent: 1750 cc's of sand, 125 cc's of solution, which you call Ruddle Solution, I believe, and 40 cc's of asphalt, and the right amount of water to temper it.

The next time I would use the same ingredients, with the exception that I would use 125 cc's of sodium silicate without the chemicals.

Q. And that is what you did when you made the sodium silicate cores, if I understand you?

(Testimony of Harry W. Dietert.)

A. Sodium silicate cores with asphalt.

Q. With asphalt emulsion, sand, and the amount of sodium silicate that you just described?

A. Yes, sir.

Q. Now, you were going to produce some evidence of your tests with the sodium silicate cores, were you? You turned to your notes a moment ago. May I examine this?

A. You may look at them if you care to. Shall I help you to explain it?

Q. Let me glance at it a moment and then I will ask you to do that. You have shown me a summary sheet entitled "Strength Tests of Core-Min-Oil Bonded Cores with and without Aluminum [461] Sulphate and Sodium Fluo-silicate." Explain just what that report refers to.

A. This report refers to cores that were made with Core-Min Oil and cores made with Core-Min-Oil where I left out the sodium fluo-silicate and the aluminum sulphate.

Q. Which set of tests refer to the ones where you left out both sodium fluo-silicate and the aluminum sulphate?

A. Group B.

Q. Will you just give for the record the comparative results of such a test as against a core made by you using the 24 Baume Core-Min-Oil that you refer to?

A. You want 24?

Q. Yes.

A. In Group B?

Q. I want a contrast or comparison, as the case may be, between the 24 Baume Core-Min-Oil core and the core made without aluminum sulphate and

(Testimony of Harry W. Dietert.)

sodium fluo-silicate. The Core-Min-Oil core with the 24 Baume, which contained the chemicals heretofore named, showed the tensile strength of 180 pounds and transverse of 35 pounds.

Q. How does that compare with the Core-Min-Oil core of 25 Baume?

A. That is the 25 Baume.

Q. How does that compare, then, to the one with the two chemicals, aluminum sulphate and sodium fluo-silicate, omitted?

A. Where it was omitted? The tensile strength is 145.8 and the transverse strength is 39; take the average of those, and within practical limits there is no difference. I can take you up to 32 Baume material and strength like this: 124 pounds with the chemicals—that is, tensile strength—35.2 pounds is the transverse. Now, with the Core-Min-Oil less the chemicals, instead of getting 124 pounds, I get 135.8 pounds, whereas with transverse that gives me 38.15 against 35 pounds. For all practical purposes you can leave out the two chemicals referred [462] to. Where there is strength or where there is moisture collapsibility, I could find no difference.

Q. You apparently have some opinion on this subject of cores. What in your opinion is an adequate transverse strength for a core of the same general size as the cores employed in these last reported tests or experiments, whatever you call them?

(Testimony of Harry W. Dietert.)

A. Transverse tests of adequate value would range between 30 to 40 pounds.

Q. And tensile?

A. Tensile, I would place the range between 145 pounds and 180 pounds.

Q. That is just your opinion, is it, or is that based on some authority?

A. Many years' foundry experience.

Q. The experience that you described here, is that correct? A. Pardon?

Q. The experience that you described here in this record? A. That is correct.

Q. What is the transverse strength of a core of the size reported in these last tests when made with Linoil, if you know? A. 49.9 pounds.

Q. And the tensile strength?

A. 180 pounds.

Q. What size did you say this core was that you have referred to here?

A. It depends on which test you refer to.

Q. In these last tests you have been referring to, I assume—I hope correctly—that your conditions were equal in the various cores; is that correct?

A. Absolutely correct.

Q. What size core were you using?

A. In the case of the transverse core, one inch by one inch by eight inch bar. In the case of the tensile core, it is A.S.T.M. tensile briquet, which has been adopted as standard by the American Foundry Association for testing the strength of cores. [463]

(Testimony of Harry W. Dietert.)

Q. And what is the size of that briquet?

A. That briquet is one inch in thickness at the narrow part where it breaks; it is one inch in width; and it has the two ears on it for testing.

Q. Did you use any approved grade of sand for the purpose of these tests?

A. I could have used the A.S.T.M. standard testing sand, but since I was very anxious to correlate the laboratory work and actual foundry work, I used the most popular core sand in the States of Illinois, Michigan, Ohio, New York, and other States.

Q. Can you define that sand for the record with reference to its characteristics?

A. I have a record here.

Q. Have you? All right. Will you just read the memorandum you have on the grading of that sand for the record, please.

A. There is a lot of data. You will find Lake sand used in all tests.

Sieve No. 6, 0 per cent retained.

Sieve No. 12, 0 per cent retained.

Sieve No. 20, 0.2 per cent retained.

Sieve No. 30, 0.3 per cent retained.

Sieve No. 40, 2.9 per cent retained.

Sieve No. 50, 10.8 per cent retained.

Sieve No. 70, 41.2 per cent retained.

Sieve No. 100, 41.0 per cent retained.

Sieve No. 140, 3.0 per cent retained.

Sieve No. 200, 0.2 per cent retained.

Sieve No. 270, 0.2 per cent retained

(Testimony of Harry W. Dietert.)

Pan, 0 per cent retained.

A.S.T.M. fineness No. 58.45.

That is all.

Q. You have referred to a core and casting, Exhibit V, offered [464] by the defendants in this proceeding, in the course of your testimony. If I understood you, you said that was one of the castings poured by you or under your direction in the course of these tests on a core made by you?

A. That is correct.

Q. And if I understood you, you stated you used one of these so-called Core-Min-Oil formulas to make the core that appears in that casting today?

A. Yes, I did.

Q. Have you any notes or records of that precise test by which Exhibit V was produced?

A. I have.

Q. Will you refer to them, please. [465]

Q. Mr. Dietert, you have testified to the making of certain experiments using three varieties of the so-called Core-Min-Oil formula, and with a product where you used only sodium silicate and asphalt emulsion with the sand. Did you make any other experiments with any other core oils than those which I have just described, and Linoil, for purposes of your testimony here? I am not interested in your past history, but only in this problem here.

A. Yes, I did. I made cores just with emulsion.

Q. Oh, you used just asphalt and sand?

(Testimony of Harry W. Dietert.)

A. That is right.

Q. And found that unsatisfactory, I assume?

A. Each of the ingredients. I made cores with just sodium fluo-silicate, just some aluminum sulphate—each of the ingredients I used separately.

Q. Then, can I put it this way: that the cores which you have worked with, other than those which were made with the standard brands of core oils, such as Linoil or Houghton Oil, and things of that sort, comprised cores made with some one or a combination of only the following ingredients: Asphalt emulsion, sodium silicate, sodium fluosilicate, aluminum sulphate, and some added water, plus, of course, the sand needed to form the core; is that correct?

A. I made also cores with what you might say—Ruddle Solution. There is one you didn't name.

Q. Ruddle Solution is composed of what, as you understand?

A. It is composed of water, aluminum sulphate, sodium fluosilicate, [466] and sodium fluosilicate.

Q. Sodium silicate, I think you mean.

A. Silicate, yes.

Q. And adding your last statement to your answer, the answer to my original question is that it is "Yes," is that right?

A. Yes, with the exception of the one I just gave you.

Q. Excepting that, yes. Prior to your work in connection with this case, and your testimony here,

(Testimony of Harry W. Dietert.)

have you ever made any cores with a core oil including sodium silicate? A. Yes.

Q. When was that?

A. The latter part of 1923.

Q. What kind of a formula did you use there?

A. We used sodium silicate and water.

Q. You were not able to make a satisfactory core, I take it, from that? A. That is true.

Q. Did you ever make any core at any time from any core oil consisting of albino asphalt and linseed oil? A. No.

Q. You were never called upon in connection with your testimony here to prepare cores made with such a product?

A. That is right, never was called on.

Q. Precisely what is the business of your company with reference to its precise activities?

A. It is two-fold: one, manufacturing; the other is testing or consulting.

Q. Taking the manufacturing end, what products do you manufacture?

A. Manufacture a complete line of American Foundrymen's Association sand and core-testing equipment, a line of moisture-testing equipment, and a line of spectrographic analysis equipment.

Q. That, I take it, your company does on a profit-making basis, as a commercial activity, is that correct? A. That is correct.

Q. Now, on the other side of your business what do you do?

A. Maintain a testing laboratory which is used

(Testimony of Harry W. Dietert.)

in connection with [467] our consulting service for the foundry industry and allied supply houses.

Q. Your testing laboratory is designed to test what products?

A. To test core oils and their ingredients.

Q. You mean by that, analyze them?

A. To analyze them—not necessarily to analyze them, but to make a physical property determination and the workability of core oils.

Q. In other words, use them to make cores, is that correct?

A. We make cores and testing, both, of the equipment.

Mr. Hackley: Q. What else do you do there?

A. We study the physical properties and analyze foundry sands where they are used for core sands or molding sands. We do likewise with various types of cores used in the foundry; do likewise with mold and core washes.

Q. Your company is generally known as a sand-testing laboratory, isn't that correct?

A. Well, it is known as a company that manufactures a line of sand-testing equipment, and also maintains this consulting service. With those qualifications I would say that the answer is "Yes."

Q. You referred to the Holcroft oven. Is that a direct- or indirect-fired oven?

A. That is a direct-fired oven, where the fire-box is independent of a battery of core ovens. The fuel is burned in a separate compartment and a

(Testimony of Harry W. Dietert.)

fan blows the heated air, plus the gases from combustion, through the battery of core ovens.

Q. The gases from combustion come into contact with the baking cores in that oven, do they not? A. Yes. [468]

Q. You have testified regarding direct-fired ovens and indirect-fired ovens and electric ovens. Now, what do you refer to as an indirect-fired oven?

A. An oven, for example, that is heated by electricity.

Q. Is that the only kind of indirect-fired oven you know about?

A. No, sir, it is not; I know of others.

Q. What are the others?

A. Where the oven is heated by means of steam, high-pressure steam piping within the oven.

Q. Do you know of any other indirect-fired ovens?

A. At the moment I can't recall any other indirect-fired oven, other than those two types I have named, that are actually used in a foundry.

Q. Other than the electric oven that you have described and the steam oven of the type that you have just described, are you familiar with any oven other than those, which effects the baking of the core without permitting the gases of combustion of the heating element—whatever that may be—to come in contact with the baking core? I am referring, of course, to foundry practice, you understand.

(Testimony of Harry W. Dietert.)

A. I don't recall one at the moment.

Q. You don't? A. That is right.

Q. Have you finished, Mr. Dietert?

A. Yes, I finished.

Q. Your answer was that you couldn't recall of any, is that right?

A. That is in use in actual foundry operation, that is right.

Q. Are you acquainted with the Young Brothers Company of Detroit, manufacturers of industrial ovens?

A. Yes, I have worked with a number of their furnaces—ovens and furnaces.

Q. They are one of the leading manufacturers of foundry oven equipment, isn't that correct?

A. One of the leading, yes.

Q. And you are familiar with them as a manufacturer of electric [469] foundry baking equipment, foundry ovens and the like?

A. Yes, I am.

Q. Are you familiar with this leaflet which I show to you, entitled, "Industrial Oven Notes, Young Brothers Company, January, 1927," for example?

A. No, I haven't made any particular notice of this leaflet.

Q. You have seen it, haven't you?

A. I don't know that I have seen this particular preprint—it is a preprint of an article.

Q. Familiar with the article, however?

(Testimony of Harry W. Dietert.)

A. No, I wouldn't say that I was familiar with the contents of the article at this time.

Q. Are you familiar with the publication known as the "O.E.L.A. Monthly"? A. No, I am not.

Q. Doesn't mean anything to you?

A. No.

Q. I want you to examine the leaflet which I have shown you here and state whether or not you agree with the context of the writer, in your capacity as a purported expert in this field, with reference to the use and adaptation, maintenance, operation, and all the rest, as described in the article, relating to electric foundry oven equipment.

Mr. Aurich: The question is objected to on the ground it is not proper cross examination, asking this witness to state whether or not he agrees with the contents of a document that has neither been authenticated nor proved in this case.

Mr. Hackley: The witness indicated, your Honor, that while he may not have seen this pamphlet, he was familiar with its general context.

The Court: Might as well go down and get the morning's Examiner. The objection will be sustained. [470]

Mr. Hackley: For purpose of identification I offer as Plaintiffs' Exhibit 56 the pamphlet entitled, "Industrial Oven Notes, Young Brothers Company of Detroit, January, 1927."

Mr. Aurich: Simply for purposes of identification?

Mr. Hackley: That is all it is offered for.

(Testimony of Harry W. Dietert.)

(The pamphlet referred to was marked Plaintiffs' Exhibit No. 56 for identification.)

Mr. Hackley: Q. Are you familiar with the equipment at the Keokuk Steel Casting Company in Keokuk, Iowa?

A. I am not, other than they have some of our testing equipment at that plant, but I have not personally visited the inside of this foundry.

Mr. Hackley: Q. You are not familiar, therefore, with their electric oven equipment?

Mr. Aurich: I object to that as assuming facts not in evidence; no evidence that that company has electric ovens.

Mr. Hackley: I am asking the witness if he knows, your Honor.

The Court: I don't know, but I doubt if there is a steel plant in America that has electric equipment.

Mr. Hackley: Well,—

The Court: I say that advisedly, so that we may get along with this case, and I will say further that on the electrical equipment here, on the showing made, unless you can make some showing yourself, or answer to the showing that is made, we are just wasting out time, and I don't waste anybody's time without telling them about it.

Mr. Hackley: We have adequate, and a great deal of evidence [471] on the subject of electric oven equipment. For example, the document I have before me happens to be a letter from this Keokuk

(Testimony of Harry W. Dietert.)

Steel Casting Company, describing an electric oven——

The Court: All right, make any showing you wish. It is not proper cross examination here. He said they used some of their equipment; that is all he knows about it; he never was there.

Mr. Hackley: Q. Are you familiar with the foundry equipment at the Vancouver Iron & Steel Foundry Company, Vancouver, Washington?

A. I am not familiar with that particular foundry.

The Court: Q. So that I may be straightened out, do you know of any steel plant in America that is using electrical equipment?

A. Yes, your Honor; there are very few of them, though.

Q. What percentage?

A. In the direct testimony Friday I stated it was from one to two percent of the total core ovens in America are heated by electricity, and that is a mighty few number of them. There are cases, it is true, but—if I can just continue—I verified that on a trip to Los Angeles: two small electric furnaces, one medium size; the total number of ovens I saw there was 28.

The Court: I can understand that there are plants specializing in this sort of—that have cores as big as a milk bottle—a small core, or something else, but beyond that, for production purposes, it is nil; it doesn't exist. I am only giving you the benefit of my own knowledge. Now, I may be in error

(Testimony of Harry W. Dietert.)

about it, but if I am, you may make any showing to the contrary. That is an issue in this case. Proceed to do it if you can.

Mr. Hackley: I am in a position to do it. It is just a question of how promptly it can be done with reference to this——

The Court: We are going into our second week in this case, [472] gentlemen, and we can't proceed with pamphlets you pick up, or any advertising matter that some concern may have to dish out their wares to the gullible public. That will not get us anywhere in this case. Now, let's proceed. I want to refrain from commenting on these matters, but it is my duty to see that we move along here, and I propose to do it.

Mr. Hackley: Q. When you were in Los Angeles did you visit the Stooddy Company at Whittier, California, to observe their electric equipment?

A. Stooddy?

Q. S-t-o-o-d-y. A. What town?

Q. Whittier, which is part of Los Angeles.

A. I didn't visit that particular foundry.

Q. What percentage of the foundries in Los Angeles do you think you visited when you went to 11 of them?

A. Roughly speaking, 50 percent.

Q. On what do you base that statement?

A. The fact that I called on the majority of the large foundries in Los Angeles and in its direct vicinity.

Q. How did you select the foundries that you

(Testimony of Harry W. Dietert.)

went to, and how did you decide to omit the others?

A. I didn't intend to omit any. I took a fair cross-section. I called up a friend of mine who sells foundry supplies, and he knows the foundries in that district, and I told him I wanted to see all of the electric ovens that he knew of, and he immediately took me to the one—showed me the little one at Warman Steel, and then we went over to Alloys Metal Foundry, the one I mentioned, and then we went to the other eight foundries—large ones. I missed a few of the large foundries, but not many of the large foundries. I dare say that my percentage, one and two-tenths percent, or thereabouts, still holds true. One and two-tenths percent of the foundries at Los [473] Angeles use the electric furnace, and some of them are awfully small.

Q. Are you acquainted with the foundry of the General Electric Company at Baltimore, Maryland?

A. Not in Baltimore.

Q. Ever been there?

A. I have been in Baltimore, yes.

Q. I mean to the foundry, of course.

A. No, not in the foundry.

The Court: They have a large foundry in Schenectady, and I worked at it. I am just trying to give you the benefit of my own experience here. We have been spending a week on it here, and they had experimental electric apparatus there, not only on cores, but on engines and everything, hoping to develop something to sell their wares. That was 35 to 40 years ago.

(Testimony of Harry W. Dietert.)

Mr. Hackley: We think, of course, that industry has made some progress in that time.

The Court: Oh, I hope so.

Mr. Hackley: I hope so. Your Honor, I am frank to say that I am going into this subject because your Honor challenged me the other day to name a single foundry in existence using electric ovens.

The Court: You are misquoting me.

Mr. Hackley: I don't intend to, of course,—to misquote your Honor.

The Court: I said there were toy electric furnaces to take care of small quantities of cores.

Mr. Hackley: Q. You went to the Warman Company, you said, in Los Angeles?

A. Yes, I did.

Q. You observed electric ovens there, and I think you said two additional large gas ovens and two additional medium gas ovens, is that right?

A. That is not right.

Q. Well, I tried to make a note of your testimony. You can correct [474] it if I am wrong. I haven't the transcript for today.

A. You are incorrect.

Q. Will you correct it, please?

A. At Warman Foundry I found one very small electric oven, which I classed as a laboratory size, and I found two large gas ovens and two medium size gas ovens.

Q. And then, if I understand you, there was

(Testimony of Harry W. Dietert.)

only one electric oven at the Warman Casting Company? A. That is right.

Q. Did you measure that oven?

A. Not with a rule, but my judgment is fair when it comes to looking at a thing. I judged the shelves were 32 inches wide this morning. They were——

Q. Your guess on it was that it was 32 inches wide? A. That is right.

Q. It was a four-drawer oven?

A. That is right.

Q. You said 54 inches high?

A. That is about the length of the drawer.

Q. Oh, the depth of the drawer?

A. That is right.

Q. What do you call a large gas oven?

A. One in which you could bake easily, per day, 25 tons of cores, plus drier.

Q. You referred to one of these ovens, or to two of these ovens at the Warman Company as being large gas ovens. I would like to know what you mean by the word "large".

A. Well, for example, the large ones were—the front of the—it is easily 10 to 12 foot in width, and it is 10 foot high, and 20 foot in depth.

Q. What do you call medium gas ovens—and I am now referring to the one at Warman?

A. The medium I would class in the six by eight by ten.

Q. Have you ever been to the Crane Company Foundry at Chattanooga, Tennessee?

(Testimony of Harry W. Dietert.)

A. No, I have not.

Q. Don't know anything about their equipment?

A. I do not. [475]

Q. Ever been to the New York Air Brake Company's foundry at Watertown, New York?

A. I have called there, but I didn't go into the foundry.

The Court: I also worked there.

Mr. Hackley: While it is not evidence, your Honor, these lists of names are all users of electric foundry oven equipment. I assume, of course——

The Court: Just like they are using in Los Angeles.

Mr. Hackley: I wouldn't call this oven up here at Yuba Foundry, seven feet by seven feet by nine feet, a toy oven.

The Court: At Yuba City?

Mr. Hackley: At Benicia; the Yuba Consolidated Gold Fields.

The Court: How many men working there?

Mr. Hackley: I don't know. This witness was up there.

The Court: That is the thing; you don't know.

Mr. Hackley: I don't think it is the number of men working, it is the production; it was producing two and three tons per week.

The Witness: That is their capacity in the foundry, and it still remains as a small foundry; very small foundry.

Mr. Hackley: Q. That word, "small," is your

(Testimony of Harry W. Dietert.)

term again. I say, that word, "small," is your term, which, of course,——

Mr. Aurich: I object to the question as argumentative. A. That is right; it is my term.

Mr. Hackley: Q. What about the United States Destroyer Base at San Diego? Are you familiar with the foundry there? A. No, I am not.

Q. Or the Navy Department's base at Pearl Harbor? A. No, I am not.

Q. The Joliet Steel Company, at Joliet?

A. I have not [476] been in that particular foundry.

Q. Don't know anything about the equipment there? A. No.

Q. Norfolk & Western Railroad at Norfolk, Virginia? A. Yes; they have a small furnace.

The Court: I take it you are going to make a showing on these foundries.

Mr. Hackley: I am going to make an effort to.

The Court: What do you mean by "effort"?

Mr. Hackley: We have one man in San Francisco who is familiar with some of these plants, and we are trying to get a man from the east who is familiar with the rest of them before this trial closes, for the purpose of testifying in rebuttal to this testimony that we have heard here.

The Court: Get through with this witness and get him here.

Mr. Hackley: Q. How about the Gleason Works at Rochester, New York?

A. Yes, they have an electric oven.

(Testimony of Harry W. Dietert.)

Q. Luckenheimer, at Cincinnati, Ohio?

A. I have been in that foundry, but I have not seen an electric oven. The big ones are not electric, and so this electric oven that is there, if it is there, it must be very small.

Q. What about the size of the oven at Gleason? Do you remember it well enough to tell us?

A. I would class it in the medium size. It doesn't strike me as a large oven at this moment. I know it was not a main unit.

Q. How about the foundry that the War Department maintains in McCook Field, Dayton?

A. I have not been in that foundry; it is not a large foundry.

Q. Hall Iron & Steel at Quebec, do you know that one at all?

A. No, I haven't been in it; I know of it.

Q. Or the General Steelware's Foundry at New London, Ontario? [477]

A. No, I have not been in that foundry.

Q. In the course of your direct examination, in the early part of your examination, you referred to the fact that Core-Min-Oil cores were affected in the direct-fired ovens by what you call CO₂ gas. You mean carbon dioxide, I assume?

A. I do.

Q. How did you determine that they were affected by carbon dioxide?

A. I made an actual test run.

Q. That was at the U. S. Radiator plant?

A. No, it was not; it was in my laboratory, where

(Testimony of Harry W. Dietert.)

I have controlled the equipment for measuring and supplying the CO₂ gas.

Q. You supplied CO₂ artificially to the core while baking? A. That is correct.

Q. In an electric oven? A. That is right.

Q. In other words, you had no normal gas of combustion in the oven, and you added CO₂ to test the effect? A. That is right.

Q. And you were satisfied that the cores made with Core-Min-Oil in the presence of carbon dioxide were valueless, if I understand you, as cores?

A. That is true.

The Court: Am I wrong, Mr. Hackley, in making the statement that your own witness so testified?

Mr. Hackley: And we concede that to be true.

The Court: Then why spend the time on it?

Mr. Hackley: I was particularly interested to find out how this witness determined it, or why he wasted any time on it, because after all, we have never contended that that was not true.

The Court: I didn't indicate that he wasted time; I indicated that you are wasting your time.

Mr. Hackley: I will make no further comment.

Q. Mr. Dietert, you spoke of the fact that Core-Min-Oil was subject to criticism because it was not what you called a ready-to-use [478] product, as you said; it was not a single-package product.

A. That was one of the disadvantages I found.

Q. Now, did you compare the time that it took to mix core sand with Core-Min-Oil, with the time

(Testimony of Harry W. Dietert.)

it took to mix core sand with Linoil, for the making of the same type of a core?

A. I made a comparative study in the foundry.

Q. Did you compare the time, the mixing time?

A. I found this: I used the same time, and I didn't get the asphalt distributed over the sand particles. I mixed it for seven minutes in a paddle type of mixer at the U. S. Radiator Corporation. I got a very inferior mix. That is the standard length of time used to mix a linseed oil like Linoil.

Q. Were you advised by the Shell Oil Company that Core-Min-Oil cores should not be mixed by a beater method? A. By what?

Q. By a beater method; that is, with a paddle type mixer of a Muller equipment—of that character.

A. I wasn't advised by Shell to that extent. In my work I started with a fresh slate.

Q. Did you observe, in the course of your preparation of Core-Min-Oil core sand, before you formed the cores, that after the sand came out of this type of mixer you used, the asphalt emulsion had broken down, separated, and that the asphalt was stringy or gummy?

A. I didn't draw that kind of a conclusion. My conclusion was that it did not mix well in a paddle type, and we had to use some intensive former mixer. With the intensive former mixer I got a good mix. That would be the Simpson mill, where you have the two wheels, and it revolves around in a pan, and then there is the clear pan type.

(Testimony of Harry W. Dietert.)

Q. Those two types of mixers produced a satisfactory mixture of sand and core oil?

A. So far as the distribution of the [479] ingredients was concerned, only.

Q. And did you observe whether or not the emulsion was broken in the course of that mixing, or would you know from your experience whether or not the emulsion was intact?

A. I am afraid that the question is a little bit too broad, but I can say that I did not observe that the emulsion was broken, nor did it concern me particularly, because if I got a good mix, why, that is what my object was, to get a good mix.

Q. You didn't care whether the emulsion had broken down or not?

A. If the emulsion had broken down I would have been concerned, because I wouldn't have got a good mix. I was interested in the material to that extent.

Q. Did you make any cores using a wet sand instead of a dry, or dried sand—using Core-Min-Oil, of course?

A. I don't believe in using wet sand, so I didn't make any mix with wet sand. I did make a mix with a moist run of sand, which was damp; if it had been wet it would have been no use for me to have started to make the sand batch in the first place.

Q. You don't consider run-of-the-mine sand to be wet sand, in the trade sense?

A. Not necessarily. Let's call it damp sand.

(Testimony of Harry W. Dietert.)

Q. You didn't make a moisture determination of the run-of-the-mine sand that you used?

A. That would vary. We made moisture determinations, yes.

Q. What is the range in your territory for run-of-the-mine sand?

A. Went up to 5.2, on a rainy day.

Q. What was the moisture content of your so-called dry sand, or dried—did you say “dry” or “dried”?

A. We actually dried it.

Q. You did actually dry it——

A. To zero. [480]

Q. To zero? A. Yes.

Q. Did you make any cores with run-of-the-mine sand? I so understood your testimony.

A. Yes.

Q. What Core-Min-Oil formula did you use when you made cores with the run-of-the-mine damp sand, as you called it?

A. I used the 24-degree solution, and the mix was 1750 cc's of run-of-the-mine sand, the dried basic amount, that is, correcting for the larger content that was in the damp sand.

Q. That is, making allowance for the weight of the moisture, is that correct. A. Correct.

Q. By extracting the moisture, but allowing for the weight?

A. That is right. I used 125 cc's of 24-degree Baume solution and 40 cc's of Y-104 Shell emulsion. No water was added. Incidentally, I chose this formula because it is the least sensitive to mois-

(Testimony of Harry W. Dietert.)

ture. If I would use the 32-degree, which is a very sensitive mix, I would have been unfair.

Q. Is the cost of core oils a factor in the adoption of a core oil by a foundry, in your experience?

The Witness: May I have that first part?

(Question read.)

A. Yes, the cost is a factor. You must also consider the quality.

Mr. Hackley. Q. Taking only the question of cost, what do you describe as the cost to a foundryman of core oil? What factors go to influence them in reaching a cost?

A. For a core oil, the cost would be the cost per gallon, the freight and the unloading labor, the storage space occupied by that material, and any additional labor that might be required in adding the ingredients to the mixer.

Q. Anything else? A. I think that is all.

Q. Wouldn't you include the operating time of the product made with [481] that core oil? In other words, the saving in fuel in the shorter baking time? Would you credit that to the cost of the core oil that saved fuel?

A. To date all the fast-baking oils have been more trouble, so, with my present experience, I am not considering the ease of baking until it is proved by the time of baking.

The Court: As a matter of fact, is there an actual relation, and if so, how much, from your experience?

(Testimony of Harry W. Dietert.)

The Witness: From my experience with Core-Min-Oil and, say, Linoil, it evens out. I can bake Core-Min-Oil cores, if they are real small, say one inch in thickness, in one-third of the time I can with Linoil, but as soon as I get a core, say seven inches in thickness, the advantage is lost.

The Court: There are seven brands of oil to mix cores with outstanding in the trade?

The Witness: The seven that I named the other day, yes, they are outstanding.

The Court: Q. Now, what is the spread between them in relation to drying a core?

A. Practically all the same, your Honor; very, very little difference.

The Court: That is the only reason I wanted to ask the question. Here are seven brands about which I know nothing. They are commercially on the market. We are here discussing an oil that may do it in half the time, which is erroneous, after all. It may or may not, I don't know. But I asked him in relation to oils that are on the market, and the differential between those oils in drying time.

Mr. Hackley: As I understood the witness, he said all these seven brands on the market dry in approximately the same time.

The Court: Yes. [482]

Mr. Hackley: And the testimony we have here by this witness, so far as small cores are concerned, is that the Core-Min-Oil dries in one-third of the time.

The Court: All right.

(Testimony of Harry W. Dietert.)

Mr. Hackley: Now, what I propose to show, if we can get it here, is that one of the major considerations in a foundry is the cost of the fuel for baking cores——

The Court: I understand.

Mr. Hackley: ——and that the factor of the saving of fuel or the loss of fuel is a very important one.

The Court: All right. That is your testimony, and that is the showing that you make. He has given seven leading brands commercially used, and there isn't any differential in the time.

The Witness: That is true, your Honor, unless the core is very small. If you group big—really large cores together, it evens out.

Mr. Hackley: I don't know; I think we are all talking at cross purposes here, for this reason——

The Court: I think we are, and I am just calling those things to your attention. Proceed.

Mr. Hackley: Any time I could bake in a third of the time I would think I had an advantage.

The Court: That would be a good thing to dream about, but it is not practical—doesn't work out in practice, and there are men who have been at the foundry for a good many years; they ought to know more about it than we do here.

Mr. Hackley: The word I would prefer to accept on it is that of these men who came right out of the foundry the other day and said they really baked it in a third of the time.

The Court: We are talking now about a trade, about an [483] activity going on all over the country.

(Testimony of Harry W. Dietert.)

Mr. Hackley: I would assume that if it would bake in a third of the time in Alameda County it would bake in a third of the time anywhere.

The Court: That is no answer to the seven leading brands used commercially.

Mr. Hackley: Q. So that we have a record on the matter, Mr. Dietert, it is your testimony that these brands that you mentioned in the course of your direct examination, all of which are commercial core oils, bake in approximately the same length of time, is that correct? A. That is right.

Q. And it is your testimony, at least on these small cores, as you have defined them, that Core-Min-Oil will bake in one-third of that time, is that correct?

A. That is correct, when the thickness of the core does not exceed one inch.

Q. I accepted that definition of small for the purpose of the question. Now, are you able to calculate from your experience what the fuel saving would be in cores baked in one-third of the time, to a foundry, based, say, on a per-ton of castings?

A. Considering—yes, considering the fact that you have to use an indirect furnace, which is a lot less efficient than a direct furnace for this particular oil that you have in discussion, there is no—I would say practically no saving.

Q. That isn't the question. I am asking the simple, direct question: Is the saving of two-thirds of the baking time on cores a material factor in

(Testimony of Harry W. Dietert.)

foundry practice? Assume nothing else but that one thing in your answer.

A. If you don't have to watch the brittleness of the core baking, yes.

Q. If I came into your foundry with a core oil that I could prove to you was equal in every way, we will say, to linseed oil, and [484] that cores made with that oil baked in less time than the core oil you were now using, would I be offering an attractive product to you?

A. If that was possible, yes.

The Court: Let's not deal with possibilities; let's proceed, gentlemen.

Mr. Hackley: Your Honor, that question is directed right to the very heart of this action.

The Court: That is your theory of the case, but the Court does not agree with you.

Mr. Hackley: I don't want to be arguing the case in the middle, your Honor, because I can tie these things together, I think.

The Court: I am anxious to get through; that is the only thing I am anxious about in this case.

Mr. Hackley: Q. Do you consider the problem of smoke given off in the pouring operation a factor in connection with the core problem?

A. Yes; if that smoke is objectionable to the nostrils of the workmen around, certainly.

Q. And I assume that a core oil which produces less smoke, or no smoke is more desirable than one which is smoke-producing, everything else being equal, is that correct?

(Testimony of Harry W. Dietert.)

A. It is desirable in that one factor, yes.

Q. Did you observe whether or not Core-Min-Oil produces any substantial amount of smoke at the time of pouring?

A. They all produce smoke, because they have emulsion in them, which smokes, and it is oil.

Q. My question is: Did you observe it?

A. Yes, sir.

Q. Now, you are stating that to be your observation, is that right? A. That is right.

Q. How much smoke did it produce, compared with Linoil cores? [485]

A. The amount of smoke was about the same as with Linoil. It was a little lighter in color. It was diluted with steam.

Q. Did you determine whether or not it was more or less offensive to the operator, the pouring operator?

A. I didn't find much difference between the two oils, the one being offensive and the other not offensive; about the same.

Q. You have spoken of a product called apshalt emulsion which you said you used in making these tests, which was given to you by the Shell Oil Company, is that correct?

A. Which was sent to me by the Shell Oil Company, yes, sir.

Q. And you called it Y-104 Colas Premix, is that correct? A. That is correct.

Q. On what do you base the statement that that is the product that you had?

(Testimony of Harry W. Dietert.)

A. The can was so labeled, and the shipping receipt at my plant, and the bill of lading of the shipment showed it came from the Shell Oil Company.

Q. Did you make any analysis, or have any analysis made of the product which you call asphalt emulsion Y-104?

A. I made no analysis myself of that particular material—chemical analysis, I refer to.

Q. You don't know what the formula, then, of the product that you used was, do you?

A. I do not know the exact formula of that particular emulsion.

Q. Do I understand that in coremaking practice with Linoil, for example, it is necessary, in the same core, to use on occasions, some several different types of core sand to make the same core?

A. Oh, yes; there are different sands.

Q. For different parts of the core, is that correct?

A. No, not necessarily.

Q. Explain it, if you will.

A. Well, we mix at times a finer [486] sand with a little coarser, and we get the porosity or permeability of grain structure, which will eliminate penetration and give us a casting surface as desired.

Q. Did you determine that with Core-Min-Oil sand it is practical to use the same sand; in other words, the same core mix for all parts of the same casting, where with Linoil you would have to use several types of sand?

A. I don't think that I stated that with Core-Min-Oil, that you could use just one type of sand,

(Testimony of Harry W. Dietert.)

so I can't agree with that question; I didn't find it so.

Q. Did you make any test to determine that fact, one way or the other?

A. I found this: that the casting surface that was obtained with Linoil and with Core-Min-Oil were identical in casting finish. The corners of one—the corner produced in casting by one was equal to the corner produced by the other. So I wouldn't class either one as being superior to the other. If you would have to use two sands for the one you would have to use two sands for the other.

Q. You referred to the warm strength of your cores. That, I understood you—and correct me if I am wrong—referred to the strength of the core to permit the necessary handling of the core after the baking operation and while it was still warm, is that correct?

A. That is correct.

Q. Now, what is regarded by you as a minimum warm strength in practice, of pounds, which is adequate for core-making purposes?

A. Thirty pounds.

Q. You referred to the determinations which you made with reference to the strength of hardness of cores molded respectively with Linoil and Core-Min-Oil. I think you said you used, for the purpose of the Core-Min-Oil test, the 24 Baume produce, is that [487] correct?

A. I did use that solution, yes.

Q. And you said that the loss on Core-Min-Oil was 82½ percent, and Linoil, 58 percent, in a seven-hour test, if I have your testimony accurately

(Testimony of Harry W. Dietert.)

noted. I want to lay this foundation carefully, so correct me, if you will, on any misquotation I may make. You have your notes, have you, that you used this morning?

A. Yes, sir. The length of time was $16\frac{1}{2}$ hours in the mold, and not seven.

Q. How about in a humidor?

A. In the humidor was a 24-hour test.

Q. What was the strength of the cores, if you made a determination of it, in pounds, at the outset, before the standing test was made?

A. The core made with the Linoil, the strength for that particular core mix was made particularly low, because at that point it was a most severe test. For the Linoil I used a core with 116 pounds original strength, and at the end of the run of $16\frac{1}{2}$ hours in the mold I had $48\frac{3}{10}$ pounds. With the Core-Min-Oil I used the 24-degree Baume solution and got the hardest core I could get, which was 196.6 pounds, and at the end, only the strength of 36.3 pounds, as compared to Linoil, which had 48.3 pounds strength. It had a head start and ended behind.

Q. On what did you base your calculation of 82 percent loss in the Core-Min-Oil pour?

A. The loss of strength from beginning to end of the test.

Q. What I am trying to find out is how you arrived at 82 percent as being a loss factor, between 196 and 36.

A. Take the difference——

Q. Is your figure 18 percent——

(Testimony of Harry W. Dietert.)

A. No, no; 58 percent is the strength loss of the Linoil core from the beginning of the test to the end of the test, and it is a difference in percentage between the tensile test of the original [488] core and then the tensile test of the core after being in the mold for 16½ hours, and with Core-Min-Oil it lost 82.5 percent in that same time, under exactly the same conditions, in the same mold.

Q. You had one with a 36-pound strength—Core-Mine-Oil; and Linoil with a 48-pound strength?

A. 48.3.

Q. And what is an adequate strength at that point for pouring purposes?

A. I feel that the core should not lose more than, say, 60 percent, or thereabouts.

Q. Regardless of that, an adequate strength for a core at that point is 30 pounds, isn't that true?

A. No, that is your transverse strength. You are thinking of warm strength now, and this is a tensile strength test, in which the tensile test specimens were placed within the mold and placed in the tensile test. You have two strength tests, the warm and the tensile.

Q. What do you consider to be an adequate tensile strength, then?

A. At room temperature?

Q. The temperature under which those tests were made, whatever that was.

A. As I stated before, between 145 to about 185 pounds.

Q. And neither the Core-Min-Oil core nor the

(Testimony of Harry W. Dietert.)

Linoil core were sufficiently strong at the end of these tests for any purposes?

A. Your correlation does not hold. This 36 and 48 pounds is the mold tensile strength and not the room; entirely different story.

Q. What is the adequate mold tensile strength in your opinion, for casting purposes?

A. Judging from my experience with Linoil and other oils that we have, similar to Linoil, it would be easy to answer: 145 pounds or so.

Q. Did you pour any castings with either the Linoil or the Core-Min-Oil cores under those conditions after the waiting period that [489] you have spoken of?

A. I have with Linoil. I have kept them in longer than that, and large numbers, in fact; particularly when the cupola would break down—keep them there for 24 hours. With Core-Min-Oil I made no test on actual castings when they were sitting in the mold a long while. It fell short so far that I didn't feel it was necessary to make the tests, from my observation. I know that Linoil just gets by. We want something better and not something worse.

Q. You stated that you made a total of 456 Core-Min-Oil cores, is that correct? A. Yes.

Q. And you have reported on 59 of those in this sheet, Exhibit EE, that you have produced?

A. That is true.

Q. Where are your reports, or your original notes on the work done with the other 400 cores?

A. They are in the book that I hold in my hand.

(Testimony of Harry W. Dietert.)

Q. Why did you select these 59 for the purpose of your record here?

A. I didn't select those 59 for the purpose of my record. I have the others right here, that I am referring to. I have made no selection up to date.

Q. How did you happen to pick out this particular 59 and mount them on the sheet, Exhibit EE?

A. Those particular 59 were made for foundry tests, the actual foundry tests.

Q. How do they distinguish from the other 400, then?

A. These other 400 were made for actual physical property tests, when I determined the gas content, and the strength, and so on, the other features that we had to study.

Q. Did you ever make any tests of any sort of a core wash made with Ruddell solution alone?

A. No, I have not.

Q. Did you ever make any tests of a core wash made with the so-called solution that you have referred to as Ruddell Solution and [490] asphalt emulsion alone?

A. No, I have not.

Q. Did you ever make any tests of a core wash in which you had its qualitative constituents the Ruddell Solution and carbon black?

A. No, I have not.

Q. Ever requested to do that by the Shell Company?

A. No, I was not.

Q. Did you ever make any tests of a core wash made with the Ruddell Solution and graphite as constituents?

A. No, I have not. [490-A]

(Testimony of Harry W. Dietert.)

Q. Did you ever make any tests of a core wash made with Ruddle Solution and diatomaceous earth as its constituents?

A. No, I have not. Neither would I attempt to, because diatomaceous earth is not necessary to consider. It is a refractory material and there are too many other refractory materials to choose from.

Q. What do you class as refractory material for use for core wash purposes?

A. A material that would have a sintering point of about 125° Fahrenheit.

Q. What do you consider to be a good core wash on the market at the present time?

A. I consider those core washes that contain graphite or coke as good core washes for gray iron. For steel I select a silica flour or magnesite as the better face, and for bronze I like the tapioca flour base the better.

Q. Are you familiar with the core wash called Plumbago?

A. If you want to call Plumbago a core wash, yes. I am familiar with Plumbago.

Q. Don't you term it a core wash?

A. No, it is Plumbago. It is not a core wash until you put something else with it, like water.

Q. You are familiar with the core wash made with Plumbago? A. That is right.

The Court: That is as far as it progressed in my day; that is all they had for core wash.

Mr. Hackley: Q. Plumbago is very widely used today as a base for core wash, is it not?

(Testimony of Harry W. Dietert.)

A. Yes, it is a very common ingredient in core wash.

Q. In fact, the so-called Plumbago core washes probably dominate the commercial market, don't they, in volume?

A. I wouldn't go so far as to state they dominate the [491] field, because in our heavy work we now use the powdered coke base material, and it is, if anything—since it is used on heavy work, the larger volume, maybe, is of the coke base and not the Plumbago. It used to be all the Plumbago; now we have the coke base very commonly used.

Q. That is a comparatively recent product in the commercial market?

A. Yes, it would be comparatively recent.

Q. What is used with Plumbago to prepare it into a core wash?

The Court: Spring Valley water. Water, isn't it?

The Witness: That is right, and a few little binders like bentonite to keep it from settling.

Mr. Hackley: I doubt if you can get the witness to limit himself to Spring Valley water.

The Court: I say this, gentlemen, because we are not making any headway here. We are dealing in mechanics and we are not dealing with the substance of the issues here involved. I would like to have you move along. [492]

Mr. Hackley:

Q. What particular formula did you use for the core that appears in Exhibit V?

A. I used 24——

(Testimony of Harry W. Dietert.)

Q. Just give me the exact formula that you used to make that core, and if you have notes, refer to notes.

A. I used 1750 cc's of dried sand, 125 cc's of 24-degree Ruddie Solution, and 40 cc's of Shell Emulsion and water.

Q. What effort did you ever make to shake out the core that is in that casting?

A. That casting was dropped once or twice, but I had other castings just like that, and as I testified this morning, I put some of those castings on a mechanical shakeout and they did not shake out, whereas the Linoil did shake out. It was a fair comparison.

Q. There has been no effort to shake out the sand in this casting?

A. That casting had just been removed from the mold and no effort made to shake it out, except it was shipped in a box from Detroit to San Francisco, which is a good shakeout process in itself.

Q. What formula did you use to prepare this core, Exhibit DD?

A. I used a formula 1750 cc's of sand, 80 cc's of 32 Baume solution, 50 cc's of Y-104 emulsion and water.

Q. What is the amount of asphalt, cc's of asphalt, that you used in the 24 Baume again?

A. 50—80.

Q. 50 of the solution and 80 of the asphalt?

A. Correct.

Q. In Exhibit DD you had what?

(Testimony of Harry W. Dietert.)

A. That is it.

Q. DD is the 24 Baume? I thought you said 32.

A. This is 32—80 cc's of 32 solution.

Q. My other question was, or intended to be, at least, What was the amount of asphalt used in the core, in Exhibit V?

A. That one has 40 cc's.

Q. 10 cc's less of asphalt in Exhibit V than in Exhibit DD, is [493] that correct?

A. That is correct.

Q. How long did you bake the core in Exhibit V?

A. V is the casting.

Q. The one in the casting is Exhibit V?

A. That one there.

Q. No, Exhibit V.

A. V is a casting. I baked my cores for those castings there, as a rule, in 45 minutes in an electric oven at 350° Fahrenheit.

Q. And how long did you bake the core Exhibit DD?

A. That is a half hour at 350.

Q. In what kind of an oven?

A. Electric oven.

Q. Do you consider yourself to be acquainted with the general core oil market in the United States?

A. Under the interpretation of "market"—my interpretation of "market," yes.

Q. How do you interpret the word "market"?

A. What the core oil should consist of, how competitive the field is, how exceedingly competitive a

(Testimony of Harry W. Dietert.)

field it is, and it is an important subject, what you might do with certain oils. I work with that every day.

Q. What is your estimate of the gallonage of core oil consumed in the United States in the year 1940, if you know or have any estimate?

A. Oh, I have a fair estimate from firms that make oils and keep up with it. Around 10,000,000 is what I thought the total market was for 1940.

Q. This is not based upon any investigation of your own but something somebody else reported to you?

A. My investigation and the opinion of two other companies. One is the sales manager of the largest oil producer in America, and his estimate and my estimate agree.

Q. I understood all of your tests have been made, these experiments that you have talked about, since the 25th of this last [494] October?

A. That is true.

Q. How long did your test take you all together in point of time?

A. Four weeks—a little over four weeks.

Q. Are you being paid for your testimony here?

A. Oh, yes.

Q. What is your charge? A. My usual fee.

Q. What are you charging?

A. \$50 a day whenever I am at my office or laboratory; \$75 for every day that I am away from my office, plus traveling expenses.

(Testimony of Harry W. Dietert.)

Q. How many days have you devoted to this case since you started on the job?

A. I don't know that exactly. I started on the 25th. I never counted them up. I arrived in San Francisco on the 24th, I think it was, and since that——

Q. 24th of what? November?

A. November, correct.

Q. And in the period between the 25th of October and the 24th of November, how many days did you charge to the Shell Oil Company?

A. As I told you, I have not figured that up.

Q. What would you estimate? Half the time?

A. No; full time.

Q. Oh, full time in that period?

A. Oh, yes.

Q. You have worked continuously for the Shell Oil Company since the 25th of October, isn't that correct?

A. That is true.

Q. There was no representative of the plaintiff, or Messrs. Peck or Ruddle, present at these experiments that you have conducted and you have talked about in your testimony, was there?

A. No.

Mr. Hackley: That is all with this witness, your Honor.

Mr. Aurich: I have no redirect examination, your Honor, but I have just one question which I neglected to ask this witness.

The Court: I was about to take a recess. I will allow you to ask that one question. [495]

(Testimony of Harry W. Dietert.)

Mr. Aurich: Just one, your Honor.

The Court: Very well; proceed.

Mr. Aurich: Q. There has been some testimony in this case, Mr. Dietert, concerning the hooding of cores in a direct-fired oven to prevent the gas, combustion gases, that is, from coming in contact with the cores. Will you state whether or not in your opinion you consider the hooding of cores an operation that could be carried on successfully in any large foundries?

A. It would be considered by myself as a very unsuccessful method and impractical.

Mr. Aurich: That is all.

Mr. Hackley: Q. Did you ever try to take any cores with a hood over them, Core-Min-Oil cores?

A. No, I did not.

GRANT E. WARREN,

Called for the Defendants; Sworn.

The Clerk: Please state your full name to the Court.

A. Grant. E. Warren.

Direct Examination

Mr. Aurich: Q. Will you keep up your voice, Mr. Warren, so that all in the courtroom can hear you, please. What is your age?

A. Thirty-three.

Q. Your residence?

A. 127 Arreba Street, Martinez, California.

(Testimony of Grant E. Warren.)

Q. And your occupation?

A. Technologist or research chemist.

Q. Are you a graduate of any university and, if so, will you tell us what university and what degrees you have?

A. I graduated from Stanford University. I have a degree of Bachelor of Arts and Engineering. [496]

Q. You are employed by the Shell Oil Company, one of the defendants in this case?

A. That is right.

Q. And you have been since about August 1933?

A. That is correct.

Q. You are employed at the Martinez Refinery?

A. Yes.

Q. What are your duties at the Martinez Refinery, just briefly, please?

A. Research on the manufacture and application of asphalting products.

Q. Did you ever do any work in connection with core oils? A. I did.

Q. What was the nature of the first work that you undertook with regard to core oil?

A. The first item was the analysis of an emulsion submitted by our sales department which was manufactured by the Union Oil Company.

Q. What was the purpose of your analyzing that emulsion?

A. I do not know that I can give you the purpose, except that it was submitted by our sales department with the request that we analyze it. I

(Testimony of Grant E. Warren.)

found out later that it was in connection with the Core-Min-Oil.

Q. Did you make any comparison between that Union Oil emulsion and any asphalt emulsion manufactured by Shell?

A. Yes. I compared that emulsion with Series Y-104, Colas Premix, and found them substantially the same.

Q. Without regard to any document now, can you tell me approximately when you made that analysis and comparison?

A. I believe in January 1938.

Q. You kept records of your work in that connection, did you? A. Yes.

Q. In notebooks? A. In a notebook.

Q. Is this the notebook to which you refer which I now show you, [497] which is marked with the name "Warren" on it? A. This is, yes.

Q. And portions of that notebook contain matters and data relating to your work on core oils, do they? A. Yes.

Mr. Aurich: I now offer in evidence as Defendants' Exhibit FF photostat copies of the pages of the notebook of the witness relating to the work done by him on core oils.

(The photostats referred to were marked Defendants' Exhibit FF in evidence.)

Mr. Hackley: Mr. Aurich, this purports to be all the parts of the notebook which refer to core oil?

Mr. Aurich: So I understand.

(Testimony of Grant E. Warren.)

Mr. Hackley: May I check the original notebook after the recess?

Mr. Aurich: Why, certainly, and if through inadvertence there are any portions omitted, why, we will be glad to furnish them.

Mr. Hackley: Subject to correction if error is found.

Mr. Aurich: Q. Following the analysis of this Union Oil emulsion and comparative tests between it and Shell's Y-104, did you do any further work in connection with core oils?

A. Yes. The next item was the preparation of experimental samples of two special emulsions for trial in core oil mixes.

Q. Can you tell us just briefly and generally what you did in that connection?

A. One was an emulsion prepared in the same manner as Shell's Y-104 Colas Premix, except with a lower alkali content so as to obtain a lower pH value.

Q. What did you attempt to do with that asphalt emulsion? Did you mix it with any other ingredients?

A. Not at that immediate time. [498]

Q. Did you subsequently attempt to make a stable mixture out of asphalt emulsion and any other ingredients?

A. Yes, I did. I attempted to make stable mixtures of both, of the special Premix emulsion and our regular production emulsion with silica solutions and with special Ruddell Oil.

(Testimony of Grant E. Warren.)

Q. Special Ruddie Oil?

A. Ruddie's Solution, it is called.

Q. Do you know what ingredients were contained in the Ruddie Solution?

A. Yes; they were sodium silicate, sodium fluosilicate and aluminum sulphate, plus water, of course.

Q. Do you recall at this time the percentages of each of those ingredients that you used in making up this so-called Ruddie Solution?

A. Not exactly.

Q. Do you recall approximately when that work was done by you?

A. During the spring and summer of 1938. It extended over a considerable period.

Q. Is that work to which you have referred your work which appears on pages 52 and 57 of your notebook, photostatic copy of which is here in evidence as Defendants' Exhibit FF?

A. Yes, sir, that is right.

Q. Did you make any reports to your superiors on the work done by you in attempting to mix this Ruddie Solution and asphalt emulsion?

A. Yes, two reports were issued on that subject.

Q. Before I show you the report, Mr. Warren, can you tell us what the results of your attempts to make a stable mixture out of using asphalt emulsion and Ruddie's Solution were?

A. I was not successful in making a mixture that I considered satisfactory.

(Testimony of Grant E. Warren.)

Q. I now show you two reports which are here in evidence as Plaintiffs' Exhibits 13 and 14, being respectively Special Report No. R-168, dated June 14, 1938, and Report No. R-175, dated [499] July 26, 1938, and will ask you if these are the reports that you referred to, that you said you made to your superiors.

A. Those are.

Mr. Hackley: Those are Exhibits 13 and 14?

Mr. Aurich: That is right.

Q. Does the Shell Company still manufacture and sell an asphalt emulsion known as the Y-104?

A. Yes.

Q. Have you recently had occasion to make an analysis of Shell's asphalt emulsion Y-104, which it is now selling?

A. Yes, I have.

Q. How does the asphalt emulsion known as the Y-104, now being sold by Shell, compare with the Y-104 that was being sold by Shell, let us say, in 1938?

A. They are substantially the same.

Q. When you made this analysis recently, from what container or place did you get the Y-104?

A. I took a sample from a 55-gallon iron tank that was brought to our laboratory by Mr. Spotswood for special purposes pertaining to this matter.

Q. How recently was this analysis made, Mr. Warren, generally?

A. With about a month.

Q. Approximately how much time did you personally spend in connection with this core oil problem during the time that you worked with it?

A. As a total?

Q. That is right.

(Testimony of Grant E. Warren.)

A. Approximately the equivalent of one month full working time, although it was distributed over [500] several months.

Mr. Aurich: That is all from this witness.

Cross Examination

Mr. Hackley: Q. What do you mean by a degree of Engineering?

A. Stanford University issues a degree of Engineer, which is largely equivalent to a Master of Arts degree, but applied to a special course of study known as engineering chemistry.

Q. What college does that come under?

A. School of Physical Sciences.

Q. Is the precise analysis of the Union Oil emulsion you have referred to that which is indicated at page 15 of the notes Defendants' Exhibit FF which have been offered as part of your testimony?

A. Yes, sir.

Q. Will you read into the record the analysis that you have there? The reason I am asking you to do this is there are a lot of abbreviations that are meaningless to me, at least. Explain what those articles are as you go along.

A. Viscosity — well, the title of the page is "Union Special D Grade Emulsion for Core Oil."

Viscosity 23.8. That viscosity is Saybolt Furol at 77° Fahrenheit, which is a standard test.

Asphalt 60.0. That means percentage of asphalt by weight.

Cement test, O.K. That means, in plain words,

(Testimony of Grant E. Warren.)

that the emulsion can be mixed with dry Portland Cement without coagulation of the asphalt.

Screen 0.0. That is the amount of asphalt retained on passing the emulsion through a 20-mesh screen.

Casein by smell, question. That represents an attempt to determine whether the emulsion contained casein by the odor of the emulsion on heating, the question indicating that it was [501] uncertain.

Stability to 10 per cent calcium chloride, O.K. That means the emulsion in question can be mixed with an equal volume of 10 per cent solution of calcium chloride without coagulation.

10 per cent hydrochloric—HCl, N. G. That means on attempting to make the same test with a 10 per cent solution of hydrochloric acid, the asphalt was coagulated.

Then asphalt test, meaning the asphalt retained on evaporation of the emulsion to dry the water, and after passing the residue through a screen; penetration 70. That is a standard test for consistency of asphalt products.

Ash 0.69 per cent. That is simply non-combustible material.

Ash Analysis 75 per cent insoluble in hydrochloric acid, and in parentheses I have "Trace of magnesium." Other constituents not identified.

Q. That completes it, does it? A. No.

Q. I am sorry.

A. Soluble CS₂ 95.4 per cent. Then I have an item which perhaps demands a little apology to the

(Testimony of Grant E. Warren.)

Court. It includes a bit of slang: "Asphalt crud." which is a local slang for heterogeneous matter.

The Court: Oh, that is not necessary. You do not offend me at all. You have to do more than that to offend me.

The Witness: Tests on that, soluble in carbon disulphide 84 per cent. That is all.

Mr. Hackley: Q. At that time did you make a comparative analysis of the so-called Y-104 asphalt emulsion of Shell?

A. I did not make a special analysis for comparison with this material. However, I had a pretty good knowledge at that time of what the characteristics were.

Q. What, if any, were the variations between the Union asphalt [502] emulsion, which you have reported on here, and Y-104?

A. I did not find any differences of great consequence.

Q. I would like to know what those differences were, if you can remember.

The Court: The testimony is there was no substantial difference.

The Witness: That is right.

Mr. Hackley: I do not know what the witness means by "substantial," your Honor; that is my problem.

The Court: Ask him that.

The Witness: I mean by that no difference greater than the allowable commercial standards for that type of product.

(Testimony of Grant E. Warren.)

Mr. Hackley: Q. The tolerances allowed in commerce on products of this kind?

A. Yes. For example, on such product a viscosity range of 20 to 55 is usually allowed, and it is not considered important what the actual figure is within that limit. Likewise, asphalt content of from 55 to 62½.

Q. What is the viscosity of Y-104, as a rule? It varies, I assume?

A. It varies somewhat, but usually in the 20's.

Q. Not far from the 23.8 referred to here?

A. No.

Q. On either side. What about the asphaltic content? 60 per cent in the Union; what is it in the Shell?

A. It might range anywhere from 58 to 62—62½, possibly. That is the maximum limit.

Q. Again somewhere near this range of 60?

A. Yes.

Q. Mr. Warren, you made an analysis, if I understood you, recently of an asphalt emulsion of the Shell Oil Company likewise called Y-104?

A. Yes.

Q. How did that analysis turn out? What did it show in comparison or contrast, as the case may be, with the analysis you just [503] reported for Y-104 in 1938?

A. Well, I would say there were minor variations in several points. For example, in viscosity, as I remember it, the last sample that I analyzed was an even 20 viscosity.

(Testimony of Grant E. Warren.)

Q. This is the one you are referring to now as having been taken out of a 55-gallon drum?

A. Yes, the viscosity was 20, which happens to be right on the lower limit.

Q. It is right at the limit. What about the asphaltic content?

A. I do not have any notes on the analysis. I can't say positively, but it was within 60, one point either way, 59 to 61.

Q. How long have you been with the Shell Company? A. Approximately eight years.

Q. Ever since you left Stanford?

A. No, I left Stanford in 1929.

Q. Did you work for some other company dealing in asphalt, or was it just some other line?

A. In another line entirely.

Q. Other than your work with the Shell Oil Company, what experience have you had with asphalt products? A. I should say none.

Q. When did you first do any work with reference to attempting to create these stable emulsions of asphalt and such solutions as the one you refer to as the Ruddie Solution?

A. The exact date I don't know, but I would say in the spring of 1938.

Q. Do these notes refresh your recollection on that? You may use them; I have no objection.

A. The first note I find in connection with that matter is April 21, 1938, but I cannot say for certain that that is the first time that I actually worked on it.

(Testimony of Grant E. Warren.)

Q. Over how long a period did you continue your efforts in that [504] direction? And you may refer, if you like, to Exhibits 13 and 14, which I believe are identified by you as reports prepared by you with another.

A. Yes. Well, since the date of the last report is July 26, 1938, I believe that must have been the latest date that I worked on the matter.

Q. It was sometime prior to that date of July 26, 1938, I assume, because you had to prepare the report?

A. That is right.

Q. Had you ever had any experience on that prior to April 21, 1938, or before that date you quoted a moment ago, attempting to prepare stable emulsions of asphalt emulsion and other products?

A. I think not.

Mr. Hackley: That is all.

The Court: Step down. Call your next witness.

ERNEST W. ZUBLIN,

Called for the Defendants; Sworn.

The Clerk: Please state your full name to the Court.

A. Ernest W. Zublin.

Direct Examination

Mr. Aurich: Q. Will you try to keep your voice up for me, Mr. Zublin?

A. I shall.

Q. What is your age?

A. I am forty-four years old.

(Testimony of Ernest W. Zublin.)

Q. You reside where?

A. 2711 Union Street, San Francisco.

Q. What is your occupation?

A. I am a chemical engineer and patent attorney.

Q. Are you a lawyer? A. No.

Q. By whom are you employed?

A. Shell Development Company.

Q. How long have you been employed by that company? A. Close to seven years.

Q. During your work with the Shell Development Company did you [505] ever have anything to do in connection with core oils?

A. Yes, I did.

Q. Do you recall approximately when you first commenced to work on core oil problems?

A. It was in the early part of—in the early spring of 1938.

Q. I now show you a document on a piece of note paper, on the lower right-hand corner of which appears the name J. F. McSwain; above that appears a date stamp April 14, 1938, underneath which are the initials B. G., and I ask you if you can identify that document for me.

A. Yes, I can. This was a note sent up to the patent department. "B. G." stands for Bernard Gratama, who is my superior.

Q. What was the purpose of your receiving this memorandum, if you know?

A. That was for the purpose of looking into the patent situation concerning solutions of this type,

(Testimony of Ernest W. Zublin.)

which were later known to us as Ruddell's Solution.

Q. Do you know from whom you received this memorandum?

A. It came to me through the regular channels after it had been received by the patent department.

Mr. Aurich: I will now ask to have the document identified by the witness marked for identification as Defendants' Exhibit GG for identification only at this time.

(The memorandum referred to was marked Defendants' Exhibit GG for identification.)

Mr. Aurich: Q. What, if anything, did you do in connection with the memorandum Defendants' Exhibit GG?

A. This memorandum, as I recall, went into the files——

Q. Well, let me ask the question this way: Were you to use this memorandum for any purpose in connection with your work, and, if so, what were you supposed to use it for?

A. We were supposed [506] to look into the patent concerning core oils containing this solution.

Q. Was the information contained in Defendants' Exhibit GG for identification sufficient for your purposes?

A. No, it was not quite sufficient.

Q. What did you do after that?

A. We thought that the method of mixing the various ingredients might have an influence on the properties of the resulting solution, and we wanted

(Testimony of Ernest W. Zublin.)

to have further information on just how to proceed to mix those ingredients.

Q. Please continue and tell us just what occurred.

A. Upon my request, Mr. Ruddie came to my office—I do not recall with whom he was at the time—and he gave me the instructions on how to proceed, and I jotted those instructions down on a piece of paper. Later I had those notes typed.

Q. You say Mr. Ruddie showed you how to proceed. He told you how to proceed to do what?

A. How to mix the separate ingredients, whether to put the sodium fluo-silicate in the waterglass—I do not recall the exact procedure at this moment—but there were several possibilities.

Mr. Aurich: For you Honor's benefit, this memorandum that the witness has identified, as our evidence will show, is what Mr. McSwain will testify Mr. Ruddie told him was the formula for making his solution, and that was sent to this man for patent purposes.

Q. I now show you another document dated April 21, 1938 and ask you if you can identify that.

A. Yes; this is a typewritten memorandum of the notes which I had taken and which I just have mentioned before.

Q. When did you get the information on that sheet as to the [507] various ingredients, formulas, and methods of mixing that are contained on the sheet?

(Testimony of Ernest W. Zublin.)

A. These were given to me by Mr. Ruddle personally.

Q. Did Mr. Ruddle tell you what they were when he gave them to you? A. Yes, he did.

Q. And if I understand your testimony correctly, you wrote them down and then subsequently had them typed in the form in which they now appear on this document? A. That is right.

Mr. Aurich: I now offer the document in evidence and ask that it be marked Defendants' Exhibit HH.

(The document referred to was marked Defendants' Exhibit HH in evidence.)

Mr. Aurich: These other formulas, your Honor, two on this sheet and one on the previous memorandum, are the three formulas with which Mr. Dietert worked in performing his experiments.

Q. Just for the purpose of identification, does your handwriting appear anywhere on the exhibit HH? A. Yes, it does.

Q. Will you identify it for us, please?

A. The numbers A 41 11, and the words "Ruddle Solution" are in my handwriting. On the first formula is a bracket which is also mine.

Q. And the A 41 11 is simply your file number?

A. That is the file number, yes.

Q. Oh, I have just one or two questions more I want to ask you, Mr. Zublin. Following the receipt of these formulas from Mr. Ruddle on or about April 21, 1938, you prosecuted or continued the

(Testimony of Ernest W. Zublin.)

prosecution of the Ruddle applications that are mentioned in the contract here in suit?

A. That is correct. [508]

Q. Now, will you just state briefly what you did with respect to prosecuting those applications? Did you prosecute them entirely on your own? Did you counsel or seek the advice of anyone and, if so, whom?

A. When we had to answer a Patent Office action, we wrote an amendment and then submitted a copy to Mr. Roemer, and went to Mr. Ruddle with a request to let us know in due time whether they agreed or disagreed with it. If they did not agree with it—no, if they did agree with it and did not let us know further, we would send it in within a given time to the Patent Office.

Q. What would happen if they did not agree with your proposed amendments?

A. They would let us know. We always gave them at least a month's time to consider it.

Mr. Hackley: I will stipulate, Mr. Aurich, there was no controversy over that subject. I think the cooperation between the patent department of the Shell Oil Company and our office was complete.

Mr. Aurich: Q. Are you a graduate of any university? A. Yes, I am.

Q. Which one and what degrees, if any, do you have?

A. I have the degree of Chemical Engineer of the Swiss Federal Institute of Technology, Zurich, Switzerland.

(Testimony of Ernest W. Zublin.)

Mr. Aurich: No further questions, your Honor.

Corss Examination

Mr. Hackley: Q. Referring to these applications for patent, Mr. Zublin, as I understood the situation, the applications were filed, at least as to Plaintiffs' Exhibits 1 and 2, prior to the time that you and your office commenced prosecution of those cases? A. That is correct.

Q. And the prosecution was continued by your office? [509] A. That is correct.

Q. With a cross-check by my office?

A. That is right.

Q. Or by Mr. Roemer in my office?

A. That is correct.

Q. And then as to the application covered by Plaintiff's Exhibit 8—the other two pages I just referred to were Plaintiff's Exhibits 1 and 2, you will note—as to patent Exhibit 8, that specification and the original claims were prepared by your staff, yourself, or someone in connection with you?

A. By myself.

Q. By yourself? A. By myself personally.

Q. Did the Shell Oil Company retain copies of the applications for the patents covering Exhibits 1, 2 and 8 at the time the prosecution of those cases was returned to my office?

A. I believe we did keep copies, as far as it went, as far as we had.

Q. Now, it was the practice, was it not, in your company, and this was what was done in this case,

(Testimony of Ernest W. Zublin.)

copies of the original application and all amendments and Patent Office actions were sent to the head office of the company at the Hague, Netherlands, isn't that correct?

A. That was the regular routine.

Q. And that was done in this case, so far as you know?

A. That was done in this case, yes.

Q. As a matter of fact, you remember when I took your deposition some time back, we went into that? That is right.

Q. Were any foreign applications filed, to your knowledge, on the disclosures of any of these three applications, Exhibits 1, 2 or 8?

A. I am not positive, but I do not believe so.

Q. Were any other applications for patent filed on any core oils other than as shown in Exhibits 1, 2 and 8, either by your company, or directed to core oils and that came to your attention [510] in connection with the arrangements between Peck and Ruddle and Shell?

A. No, I don't think so. The only thing we did file was albino asphalt.

Q. You filed an application on albino asphalt, and that was an application which resulted in the patent to one A. P. Anderson of the Shell Development Company in Emeryville; is that correct?

A. That is right.

Q. Is this a copy of the Anderson patent—and I refer you to a copy of patent No. 2,201,466 that

(Testimony of Ernest W. Zublin.)

was prepared and filed by you and your staff, is that correct? A. That is right.

Q. And prosecuted by your staff?

A. By myself, yes.

Q. That application was filed on January 21, 1938, isn't that correct?

Mr. Aurich: The document speaks for itself. We object to the question on that ground.

A. That is right.

Mr. Hackley: Q. Copies of the application for the Anderson patent, No. 2,201,466, and the amendments and Office actions in connection with that were not transmitted by you at any time during the prosecution of the application, at least, to the office of Townsend & Hackley or to Mr. Roemer, is that correct?

A. No, they were not.

Q. And not to Mr. Peck or Mr. Ruddle?

A. No, they were not.

Q. Any information relating to the Anderson patent was at any time, say up to, oh, the end of the year 1939—— A. No.

Q. So far as you know, not to either Mr. Roemer, Mr. Ruddle, Mr. Peck or anyone in connection with them? A. No, they were not.

Mr. Hackley: I offer as Plaintiff's Exhibit 57 plain copy of Anderson patent No. 2,201,466, filed January 21, 1938, issued May 21, 1940.

(Document marked Plaintiff's Exhibit No. 57 in evidence.) [511]

Mr. Hackley: Q. Mr. Zublin, what did you

(Testimony of Ernest W. Zublin.)

mean when you said the formula illustrated in your exhibit for identification GG was sent to you for patent purposes?

A. Whenever something novel comes up in the matter of technical developments, the patent department is usually informed one way or the other so that we may look into the patent possibilities, and this is just another way of sending information to us, either by note or by formal report.

Q. A search was made upon the subject matter of the disclosure Exhibit GG for identification?

A. Yes, a search was made on that.

Q. Search made only in the patent office, or was it made as well of the publications in the art?

A. There also was a search made of the publications in the art by the library.

Q. Did your Hague office make any search, do you know? A. That I do not know.

Q. None was reported to you?

A. None was reported to me.

Q. None came to your attention. Was the search made only on the solution comprising water, aluminum sulphate, sodium fluosilicate and sodium silicate mentioned in Exhibit GG for identification?

A. No, it went further than this. We also looked into the art on asphalts and combinations of asphalt with other ingredients—for instance, water-glass.

Q. In other words, you made your search directed not only to the disclosure on Exhibit GG for identification, but also the use of asphalt in cores

(Testimony of Ernest W. Zublin.)

either with or without any of these ingredients or in combination with them? A. Correct.

Q. When was that search completed, if you remember? [512]

A. I don't recall the exact date, but it was sometime in the early spring.

Q. Of 1938? A. Of 1938, yes.

Q. Completed, say, by late June of 1938, wasn't it? A. Probably earlier.

Mr. Hackley: That is all.

Mr. Aurich: No further questions. [513]

W. H. SPIRI,

called for the defendants; sworn.

The Clerk: Q. Please state your full name to the Court.

A. W. H. Spiri.

Direct Examination

Mr. Aurich: For the Court's benefit, I might say that Mr. Spiri is one of the gentlemen who worked on this core oil problem while he was connected with the Shell Company, and he worked on it, as his testimony will show, for about seven or eight months. Necessarily, therefore, his testimony will be a little longer than that of the two previous witnesses, but I am not going into it in any more detail than I can possibly help.

(Testimony of W. H. Spiri.)

The Court: To protect your record; there is no necessity of going into it in minute detail.

Mr. Aurich: That is correct, your Honor.

Q. Will you state your age, please?

A. Thirty-six years of age.

Q. And your occupation?

A. Industrial salesman.

Q. Where do you live?

A. At 50 Oakwood Avenue, San Anselmo, California.

Q. By whom are you now employed?

A. By the Tidewater Associated Oil Company.

Q. How long have you been employed by that concern?

A. Since September 8, 1941.

Q. You were formerly employed by the Shell Development Company, one of the defendants in this case?

A. I was.

Q. Roughly, during what period of time were you so employed?

A. I was employed at the Shell Development Company from August, 1938, until August, 1940.

[514]

Q. What were your duties while you were so employed by the Shell Development Company?

A. I was a mechanical engineer in charge of development and general engineering work, and field work.

Q. What are your educational qualifications as an engineer?

A. I have four years of apprenticeship as a

(Testimony of W. H. Spiri.)

mechanic and four years' college, graduating as a mechanical engineer.

Q. Of what college are you a graduate?

A. State College in Switzerland.

Q. During your college work did you have any experience in foundry practice?

A. Not during my college days, but during my days of apprenticeship.

Q. Was that before you went to college?

A. That is right.

Q. How much time did you spend in a foundry during your apprenticeship days?

A. I would say at least eight months.

Q. When did you graduate from this college?

A. In 1928.

Q. Between the time of your graduation from the State College in Switzerland in 1928 and the time you entered the employ of the Shell Development Company, what experience, if any, did you have in a foundry?

A. During my employment with the Byron Jackson Pump Company in Berkeley, California, particularly during the time I spent in their engineering department, I had a continuous contact with their foundry supplier, which is the H. C. Macauley Foundry Company, and their pattern shop. As a matter of fact, I made most of their pattern drawings, and had an everyday contact with that foundry for at least two years.

Q. During that experience did you become familiar with the art of coremaking generally?

(Testimony of W. H. Spiri.)

A. I became familiar with the art of coremaking during my apprenticeship, and added considerable to my knowledge during that time and experience.

Q. While you were employed by the Shell Development Company did you [515] have any occasion to do any work in connection with core oils?

A. Yes, I did.

Q. Without referring to any memoranda now, can you tell us approximately when you commenced to do work on core oils for the Shell Development Company?

A. Without looking at my notes, I would say I started in the middle of November, 1938.

Q. And when did that work cease with the Shell Development Company?

A. I terminated the experiments between July and August of 1939.

Q. Now, while you were doing this work on core oils from November of 1938 until July or August of 1939, did you keep a record of work done by you, tests performed, observations that you made, et cetera?

A. Yes, I certainly did.

Q. I show you a group of notes in a folder, entitled "Core-Min-Oil Notes, No. 1, W. H. Spiri," and ask you if that is one of the volumes of notes that were kept by you?

A. Yes, this is one of my notebooks.

Mr. Aurich: Q. Are all the notes in this notebook or folder marked No. 1 in your own handwriting?

(Testimony of W. H. Spiri.)

A. With the exception of one or two pages, all are my own handwriting.

Mr. Aurich: I offer the folder of notes identified by the witness and ask that they be received in evidence and marked Defendants' Exhibit II.

(The folder referred to was marked Defendants' Exhibit II in evidence.)

Mr. Aurich: Q. I now show you two additional folders, the first of which is marked, "Core-Min-Oil Notes, No. 2, W. H. Spiri," and the second, "Core-Min-Oil Tests No. 3, W. H. Spiri," and ask [516] you if these are notes made by you in the course of your work on core oils and whether or not substantially all of the notes contained therein are in your own handwriting?

A. These are my notes, and substantially all the pages are in my own handwriting.

Mr. Aurich: I offer in evidence as Defendants' Exhibit JJ the folder of notes identified by the witness and marked, "Core-Min-Oil Notes, No. 2."

(The folder referred to was marked Defendants' Exhibit JJ in evidence.)

Mr. Aurich: As Defendants' Exhibit KK, I offer in evidence the folder of notes identified by the witness and marked, "Core-Min-Oil Tests, No. 3."

(The folder referred to was marked Defendants' Exhibit KK in evidence.)

Mr. Aurich: Q. I now hand you a notebook with the name "W. H. Spiri" appearing on the

(Testimony of W. H. Spiri.)

outside, and ask if you can identify that notebook, and if so, tell us what it is, briefly?

A. This notebook is a standard laboratory notebook kept at the Shell Development's Emeryville laboratory, and all the pages filled herein are in my own handwriting.

Mr. Aurich: I offer the notebook just identified by the witness, in evidence, and ask that it be marked Defendants' Exhibit LL.

(The notebook referred to was marked Defendants' Exhibit LL in evidence.)

Mr. Aurich: Q. I now hand you two more folders, the first of which is marked "Core-Min-Oil, Vulcan Foundry Tests, 1938-1939, W. H. Spiri," and ask you to tell the Court what is contained in that folder?

A. This folder contains the day-to-day foundry [517] reports, noting down all the tests which were made at the Vulcan Foundry at East Oakland.

Q. And likewise are all the notes in that folder marked "Core-Min-Oil, Vulcan Foundry Tests," in your own handwriting? A. Yes, they are.

Mr. Aurich: I offer in evidence as Defendants' Exhibit MM the folder of Vulcan Foundry reports which the witness has just identified.

(The folder referred to was marked Defendants' Exhibit MM in evidence.)

Mr. Aurich: I might say to your Honor that that last exhibit and the next exhibit that I have to offer are on a mimeographed form which was pre-

(Testimony of W. H. Spiri.)

pared by this witness, setting forth the places for the various data.

Q. The next folder I hand you is identified as "Core-Min-Oil Tests, Berkeley Brass Foundry Company, Berkeley, Cal., May, 1939." Will you please tell the Court what that is?

A. This folder contains notes, as well as day-to-day foundry reports of tests made at the Berkeley Brass Foundry Company in Berkeley, California.

Q. Those notes are in your own handwriting?

A. They are.

Mr. Aurich: I offer in evidence as Defendants' Exhibit NN the folder containing the notes identified by the witness, being work done at the Berkeley Brass Foundry.

(The folder referred to was marked Defendants' Exhibit NN in evidence.)

Mr. Aurich: Q. I am now going to hand you some various reports in typewriting, Mr. Spiri. I think you have seen them all before. Will you just glance at them hastily and tell the Court generally what they are?

A. These reports are mainly letters to my superiors, the Shell Development Company and Shell Oil [518] Company, giving the high spots at various intervals, of the procedures and the major tests made, and the major results obtained during the time I worked with Core-Min-Oil.

Q. I notice that the first of the group of reports that I just handed you is undated. I now show you

(Testimony of W. H. Spiri.)

a letter dated December 1, 1938, which has a signature at the end thereof, and I will ask you if that is your signature, and if you can fix the approximate date of the first report by means of that letter?

A. This is my signature, and this letter dated December 1st of 1938, and the report attached to it is the first report, and was very probably written during the latter part of November.

Q. 1938? A. 1938.

Mr. Aurich: I will now offer in evidence as Defendants' Exhibit OO, the first report identified by the witness, being an undated report.

(The report referred to was marked Defendants' Exhibit OO in evidence.)

Mr. Aurich: As Defendants' Exhibit PP I offer in evidence the letter dated December 1, 1938, which has been identified by the witness. This letter, I might add, is offered solely and only for the purpose of fixing the date of the first report.

(The letter referred to was marked Defendants' Exhibit PP in evidence.)

Mr. Aurich: As Defendants' Exhibit QQ I will next offer in evidence the report by this witness dated January 24, 1939.

(The report referred to was marked Defendants' Exhibit QQ in evidence.)

Mr. Aurich: As Defendants' Exhibit RR I offer in evidence the report of this witness dated February 7, 1939.

(Testimony of W. H. Spiri.)

(The report referred to was marked Defendants' Exhibit RR in [519] evidence.)

Mr. Aurich: As Defendants' Exhibit SS I offer in evidence the report of this witness dated March 1, 1939.

(The report referred to was marked Defendants' Exhibit SS in evidence.)

Mr. Aurich: As Defendants' Exhibit TT I offer in evidence this witness' report dated March 24, 1939.

(The report referred to was marked Defendants' Exhibit TT in evidence.)

Mr. Aurich: As Defendants' Exhibit UU I offer in evidence this witness' report dated April 14, 1939.

(The report referred to was marked Defendants' Exhibit UU in evidence.)

Mr. Aurich: As Defendants' Exhibit VV I offer in evidence this witness' report dated April 27, 1939.

(The report referred to was marked Defendants' Exhibit VV in evidence.)

Mr. Aurich: As Defendants' Exhibit WW I offer in evidence this witness' report dated May 24, 1939.

(The report referred to was marked Defendants' Exhibit WW in evidence.)

Mr. Aurich: And as Defendants' Exhibit XX

(Testimony of W. H. Spiri.)

I offer in evidence this witness' report dated June 6, 1939.

(The report referred to was marked Defendants' Exhibit XX in evidence.)

Mr. Aurich: Q. You made one other report, Mr. Spiri, in addition to those I have just offered in evidence?

A. Yes, I did. [520]

Mr. Aurich: Q. I will show you a document which has heretofore been identified in this cause as Plaintiffs' Exhibit 23. Did you prepare that report?

A. Yes, I did.

Q. That report was prepared in collaboration with Mr. Spotswood? A. That is correct.

Q. The report, Plaintiffs' Exhibit 23, was your concluding report on all the work done by you in core oils? A. That is correct.

Q. I take it we have now before the Court all of the written matter prepared by you concerning your work on core oils, which includes your notes, your foundry reports, your book, and your type-written reports to your superiors?

A. That is correct.

Q. In what foundries did you work with Core-Min-Oil?

A. I worked mainly at the Vulcan Foundry Company in East Oakland, and made additional tests at the Berkeley Brass Foundry Company in

(Testimony of W. H. Spiri.)

Berkeley, California, and at the Axelson Machine Company of Los Angeles. [521]

Q. I neglected to ask you this before: These foundry reports are dated, and I notice that in your notebook and in your other reports there are dates. I assume that the entries appearing opposite those dates were made on or about the date they bear.

A. Usually on the day the tests or reports were made.

Q. Now, during this period of time that you state you worked with core oil while with the Shell Development Company, how much time did you spend, actually, on that work?

A. With the exception of a very few days, I spent my entire time on this problem.

Q. Did you do any work in connection with core oils prior to November 17, 1938?

A. I did not.

Q. Did you do anything in connection with core oils prior to that date?

A. I discussed the core oil problem with the officials of the Shell Oil Company and Shell Development Company, and I also made it a point to familiarize myself again with the approved art of coremaking, and got acquainted with what kind of equipment was being used in present-day foundries.

Q. In connection with that work, did you visit any foundries around the Bay area, or elsewhere?

A. Yes, I did visit several foundries around the Bay area.

(Testimony of W. H. Spiri.)

Q. There is a list of those foundries in your notebook, is there? A. That is right.

Q. Will you look at your first notebook, please, page 60—that is Defendants' Exhibit II—and using that to refresh your recollection, state what foundries that you visited when making your investigation?

A. In making my investigation I visited the American Manganese Steel Company, the Apex Bronze Foundry, the Berkeley Brass, General Metals, The Pacific Foundry, the Vulcan Foundry, and H. C. Macauley Foundry Company. [522]

Q. I notice on that page 60, Mr. Spiri, you also have listed Columbia Steel.

A. Well, the Columbia Steel, as well as the Pacific Steel Casting Company, which is also listed on this page, were not visited.

Q. Approximately how much time did you spend in making this investigation and visiting these various foundries?

A. I would say about between four to six weeks prior to actually entering my work.

Q. What type of oil do you recall was being used by these various foundries generally?

A. Generally, Linoil, linseed oil, Houghton Oil, and Quandt Oil.

Q. As a result of these investigations and study which you made of these foundries, did you arrive at any opinion as to the requirements of a core oil for foundry use?

A. Yes, I certainly did.

(Testimony of W. H. Spiri.)

Q. Are the requirements for a core oil set forth in your notes? A. Yes, they are. [523]

Q. Now, outside of core oils, what other study of coremaking was investigated by you prior to the time that you actually engaged in the work of making cores?

A. Well, I studied current foundry publications, such as *The Foundry*, which is a journal, and investigated the types of ovens used, the modern art of coremaking, the time of baking, and so forth.

Q. What type of ovens did you find in use in foundries that you have referred to and that you have visited, direct-fired or indirect-fired?

A. All the foundries that I have visited personally had direct-fired ovens, with the exception of the Axelson Machine Company, which had a semi-indirect-fired oven, by which I mean that the fire-box was outside of the oven and the flue gases were circulated through the oven.

Q. In so far as the gases of combustion were concerned, the Alexson Foundry oven would be a direct-fired oven? A. Yes, sir.

Q. Now, just briefly and generally, what did you do following your studies and preparing to work on this problem?

A. I prepared all the necessary equipment and got in touch with the Vulcan Foundry & Machine Company, who were selected to assist us or give us space and time and core-makers to carry out this work.

Q. What work were you going to carry out?

(Testimony of W. H. Spiri.)

A. I was going to make tests at the foundry right alongside with the regular coremaking of that particular foundry.

Q. Do you know when you actually commenced to do this work in the [524] Vulcan Foundry?

A. I commenced working at the Vulcan Foundry approximately in the middle of December of 1938.

Q. Prior to that time had you had any personal knowledge of any of the experiments carried on, tests performed, or results obtained by Shell in connection with their work on core oils?

A. I had not.

Q. Had you any personal knowledge as to whether or not, prior to December, 1938, the Shell Oil Company, or the Shell Development Company, had been able to make a stable mix or Core-Min-Oil?

A. I had no such knowledge.

Q. Did you ever have any understanding as to the ingredients that made up Core-Min-Oil?

A. By verbal understanding.

Q. What was that, please?

A. Pardon me?

Q. What was that understanding? What understanding did you have as to what Core-Min-Oil was composed of?

A. Well, I had none.

Q. Well, did anybody tell you what was in it?

A. Verbally, I was told,—

Q. Well, tell us what you knew about it, or what you were told, please.

The Court: Q. By whom?

A. I was told by Mr. Spotswood that the Core-

(Testimony of W. H. Spiri.)

Min-Oil contained an asphalt emulsion and a solution of sodium silicate and some chemical ingredients.

Mr. Aurich: Q. You are not a chemist?

A. No, I am not.

Q. Prior to the rendering of your first report, Defendants' Exhibit OO, had you made any cores at the Vulcan Foundry, or performed any experiments at that place? A. I had not.

Q. Prior to the rendering of your first report, Defendants' Exhibit [525] OO, had you made any cores with the so-called Ruddell Solution, or Core-Min-Oil, while you were employed with Shell?

A. No, sir, I had not.

Q. When did you actually commence work in the Vulcan Foundry—and I ask you that in connection with your notes, and will ask you to turn to pages 57 to 35 of your first notebook, Defendants' Exhibit II?

(To the Court): I was going to tell the Court that these books, these notes that the witness has, run backwards; that is, the earliest date is way in the back of the book, and the latest date is at the front.

The Court: Maybe I can be helpful here.

Mr. Aurich: Yes, your Honor.

The Court: Q. Now, you have indicated generally what you did, and the period of time in which you did it, and the facts and circumstances, and the reports, are here. A. Yes.

Q. As a result of your work and your examina-

(Testimony of W. H. Spiri.)

tion, tell us what you did yourself, aside from your notes or anything.

A. Well, I investigated—before I started making the actual tests at the Vulcan Foundry I investigated the type of oven they had, their way of making cores, because I knew I had to make cores under similar circumstances, under similar conditions, and also the same core-makers they use in making their regular cores every day. I set up an oven at the Vulcan Foundry, which was brought in from the Martinez Refinery, and I got all the tools together and made a few cores to practice, in order to be able, when we would get ready for making the tests which we intended to make, we would know what we were doing. I also investigated the type of sand-mixing used out there, drying the core sand, and so forth.

Does that answer your question? [526]

Q. All right, then, what did you do? These were things you did. Now tell us what was the result of them; what happened?

Mr. Aurich: I think the Court is interested in having you describe in some detail just what you did.

The Court: Q. What you did, and as a result of what you did, what is your opinion?

A. I had core oil prepared.

Q. What core oil?

A. Core-Min-Oil, prepared at the Emeryville laboratories of the Shell Development Company, and I picked that Core-Min-Oil up in the morning before I went to the foundry. Then I mixed the Core-Min-

(Testimony of W. H. Spiri.)

Oil with the sand in the various proportions, and I tested the workability, that is, how it flowed in the core box, in the drag; how it kneaded with the cope; how it reacted in the oven the Vulcan Foundry had, and how it reacted in the indirect-fired gas oven which I had brought down from Martinez.

I also compared it, as far as strength of the core was concerned, with the linseed oil cores made by the Vulcan Foundry, and found that the strength was considerably lower—as a matter of fact, in most cases unsatisfactory for making castings. Most cores which were used to make castings had to be handled with kid gloves and had to be put in a mold very carefully.

I also, during my experiments, stored a number of cores away alongside of other cores, linseed-made cores, to see if the cores would stand the storage and the handling as the linseed oil cores did, but they did not.

That is briefly stating the prior work in the actual tests.

Mr. Aurich: Q. Well, you also did some work at Axelson Foundry. You might go on and tell the Court, in your own way, what you did at Axelson, what oils you worked with down there, and what the results were, and just like that. [527]

A. The Emeryville laboratory prepared a great number of these Core-Min-Oils, and the one we considered best, as to mixability and strength and friability, we took to a foundry which was not acquainted with Core-Min-Oil at all. That was the

(Testimony of W. H. Spiri.)

Axelson Machine Foundry in Los Angeles. The Shell Development Company prepared five cans of Core-Min-Oil, three of which contained a black Core-Min-Oil, and two of which contained a light oil.

On my arrival in Los Angeles I found two of the black oils were so jelled, we could not shake them out of the can. Those could not be used for mixing with the sand at all. One of the cans containing black oil was mixed with sand. Cores were made by the core-makers of Axelson's; a few cores were made by myself. And the cores were put in their semi-direct-fired oven.

The result was that the cores crumbled; they had no strength after baking. Of course, the cores were simple cores, just cylindrical type of cores. In order to give the Core-Min-Oil a very good chance, I saw that the Axelson Foundry foreman was very much interested in our product. He told me I could use their electric-heated furnace and make some cores in there, so as to get away from possible attack of the flue gases, and this opportunity was taken up, and I made cores and put them in the electric furnace. I baked them with the same baking time for that particular size of core as I had experienced at the Vulcan Foundry. I found that the cores were not strong enough, and they were not approved. None of them was approved for making any castings, because the superintendent of the foundry simply said they were not strong enough. He would not consider them for making castings.

Mr. Aurich: Does that answer your Honor's

(Testimony of W. H. Spiri.)

question? I might say that the foundry reports this witness prepared do not show the exact type of oil that was being used. It would be prepared at [528] Emeryville. And I am going to present proof, part of which goes in now, and some later, as to exactly what was used.

Q. I hand you a folder, that I will ask to have marked Defendants' Exhibit YY for identification, containing numerous formulas. You have seen that document before?

A. Yes, I have seen this document.

Q. You have examined it?

A. I have examined it.

(The folder referred to was marked Defendants' Exhibit YY for identification.)

Mr. Aurich: Q. I notice that in your foundry report you have a place to indicate the formula used by you, and on some occasions the formula is not sufficiently identified, so that one looking at the report could tell exactly what core oils you were using; and I also understand further, on a great many of these occasions, you had no personal knowledge of the actual ingredients, or percentages of each, that were contained in these various core oils, is that correct? A. That is correct.

Q. Are there any instances in your foundry report where you used a core oil that was prepared by you?

A. Yes, sir; several instances.

Q. Have you, at my request, prepared a list of

(Testimony of W. H. Spiri.)

those instances for me, so that we can identify them?

A. All I have is the page number.

Q. And the test number?

A. The test number.

Q. Now, if I understand you correctly, you are going to now tell us the tests that you made, by referring to Defendants' Exhibit NN and MM, the core oils that you used?

A. That is correct.

Q. Will you read those test numbers into the record, please?

A. These test numbers are Test No. 19, 22, 24, 58 to 71, 74, 76, 80, 83, 84, 87, 90 to 93 inclusive.

[529]

Q. Did you mention 20 and 21? A. No sir.

Q. Will you look at your Tests Nos. 20 and 21 in Defendants' Exhibit MM, and see if that should not be included in that list?

A. This should be included in the list, although it was not a prepared core oil by myself. It was a mixture of two core oils.

Q. That you mixed together at the foundry?

A. That is right.

Q. In other instances, as indicated by your foundry tests, you would add various materials to the core sand as you would mix it with the core oil, is that right? A. Yes, sir, I did.

Q. And those instances are recorded on your foundry reports as indicated in Defendants' Exhibit MM and NN? A. Yes, they are.

Q. And in all other instances the formulas, or

(Testimony of W. H. Spiri.)

rather, the core oils that you received from Doctor Wright were mixed with the sand without any additions by you, is that correct?

A. That is correct.

Mr. Aurich: For the Court's benefit, I might say those instances in which this witness used the core oils that he knew of at the foundry, the foundry reports speak for themselves as to what was contained therein, and I will not detail that.

Q. Now, the Court asked you one question that you have not answered yet, Mr. Spiri, and that was to state what conclusion you arrived at with respect to these core oils with which you worked, as to its workability, its use in practical commercial foundry operations.

Mr. Hackley: I object to that, your Honor, on the ground that the witness has not been qualified as an expert.

The Court: It is the result of his experiments, as a result of the work that he has enumerated here, and as a result of his reports. I will allow him to answer the question. [530]

A. Thank you. As a result of my tests and experiments I made with these Core-Min-Oils I found—and the tests will bear me out—that all the core oils prepared, containing sodium silicate solution, could not be baked in a direct-fired oven. It was necessary, as a matter of fact, even at the time of testing it at the Vulcan Foundry, to get an indirect-fired oven.

Furthermore, the strength of the cores was never

(Testimony of W. H. Spiri.)

sufficient, if the friability was considered fair, or if the friability was bad, that is, it was necessary to use a tool to get the core out of the casting, the strength was considered acceptable by the foundry foreman to make a core and make a casting with that particular core.

Furthermore, all the cores had to be selected, and out of a great number of cores which were made, the total including—all the tests alone made at the Vulcan Foundry contained some 770 cores, of which only about 470 were approved for making castings, and only about half of that were actually cast, which shows a loss of about 61 percent, which in my personal opinion, as well as the opinion of the foundry foreman, is not allowable.

Mr. Hackley: I object to the opinion of the foreman as hearsay.

Mr. Aurich: That may go out.

The Court: That may go out.

A. (Continuing): The cores also were subject to water absorption. In other words, they could not be stored. We only made tests in storing the cores alongside the linseed-baked cores. But one of the severe tests, as I understand it, is to place the core in the mold, and since many foundries wait until pouring day, until they have a run or have heat, they have to have the cores laying in a wet mold, where it is subject to water absorption. [531]

It was also observed that the core sand mixed with this Core-Min-Oil was sticking to the core boxes.

(Testimony of W. H. Spiri.)

It was therefore necessary to dust the core boxes almost immediately after one core was made, with lycopodium, or wash out the core boxes with kerosene, dry it, and then dust it. It was also observed in many of these prepared core oils made by the Emeryville laboratory that pellets were formed when the core sand was mixed with the core oil; that is, the core oil did not thoroughly and evenly mix with the sand. It formed pellets, and the rest of the sand did not get any core oil at all, which would be commercially a very bad point.

Furthermore, it was necessary, in order to be able to do any coremaking, to prepare the core immediately the sand had been mixed, because the sand was crusting over almost immediately after preparing it.

Mr. Aurich: Q. Let me interrupt you a minute, Mr. Spiri. Perhaps I can shorten it this way: All the conclusions that you arrived at as a result of your working with these core oils, from November, 1938, to July or August, 1939, are set forth in your reports, are they? A. That is correct.

Q. And particularly your report of August 7, 1939, Plaintiffs' Exhibit 23?

A. That contains all these results.

Q. I just have one more question, now: During this time you were working with this core oil, you used a core oil that has been identified in various ways as being in an emulsified state, or a stable

(Testimony of W. H. Spiri.)

mixture, or a ready-to-use core oil, is that right?

A. That is right.

Q. And a great many of your experiments, however, were with a core oil wherein you mixed the two ingredients separately with the sand?

A. That was done. [532]

Cross Examination

Mr. Hackley: Q. I understand you are at present employed by the Tidewater Associated Oil Company?

A. That is correct.

Q. Where, Mr. Spiri?

A. In Sacramento.

Q. In what capacity?

A. As an industrial salesman.

Q. Working out of the main office in Sacramento?

A. Yes, sir; district office.

Q. And you are on leave to testify here, I assume?

A. Pardon me?

Q. You are on leave to testify here?

A. That is right.

Q. Did you go directly from the Shell Oil Company to the Tidewater Associated Oil Company?

A. No, I did not. I did some other work in the meantime.

Q. What was the nature of that other work?

A. Surveying for the Marin Municipal Water District, and general engineering work, and I did trial work for the United States Navy.

Q. What is your present home address?

A. 50 Oakwood Avenue, San Anselmo, California.

(Testimony of W. H. Spiri.)

Q. Now, in all of these tests that you have reported here, did you, if you know, at any time use a product comprising asphalt emulsion as one part, and a solution comprising sodium silicate, sodium fluosilicate, aluminum sulphate and water, as the other part, and mix the two parts separately with the sand, for the purpose of [533] making a core?

A. No, I did not, not to my knowledge.

Q. You did your work with products which were in the so-called one-package class, as they have been referred to in this Core-Min-Oil work, isn't that right?

A. That is correct.

Q. The product you took to the Axelson Foundry, or the products—I think you said there were five cans?

A. That is right.

Q. Were all supposedly one-package core oils?

A. That is right.

Q. Ready for use?

A. That is right; ready-for-use core oil.

Q. I believe you testified that the products were affected in the work at the Axelson Foundry by the gases of combustion in the Axelson ovens, is that correct?

A. That is correct, yes, sir.

Q. Did you, in your work, either at the time you commenced the work, or at any time during it, with Core-Min-Oil, have reference to the technical reports, 79 and 90, of your company, or of the Shell Oil Company? I will show you what I mean by those reports.

(Testimony of W. H. Spiri.)

A. May I see those reports, please?

Q. Yes; just a moment, please. First I show you Exhibit 3, which is TAC 79, dated February 24, 1938. Can you answer the question as to that report, Mr. Spiri?

A. I have seen this report.

Q. When did you first see that report, do you remember?

A. As I recollect it, during the late December, 1938.

Q. About at the time you started your work, is that correct?

A. That is right. I just simply read this report.

Q. What was the date that you went to the Axelson Foundry?

A. Without looking at my records, I went to the Axelson Foundry—

Q. That is, approximately.

A. Yes—I believe in May of 1939.

Q. That would be within a month, one way or the other, of that time, at least, wouldn't it?

A. That is right; that is correct. [534]

Q. At the time you went to the Axelson Foundry you knew, did you not, that Core-Min-Oil had been determined as being useful only if care was taken to exclude CO₂ when drying in gas ovens?

A. By the time I went to Axelson I knew that.

Q. You knew it before you went to Axelson?

A. That is right.

Q. Why did you go down there and make tests

(Testimony of W. H. Spiri.)

of Core-Min-Oil in ovens containing CO₂ gases if you knew they could only be a failure?

A. When I was in Los Angeles, I contacted the Axelson Machine Company and asked them, without personally investigating the oven, what sort of an oven they had. They said an indirect-fired oven. However, when I got there—I had my core oil along with me—and personally inspected the oven, I found that by indirect they only meant that the firing chamber was outside the oven, and called that an indirect oven.

Q. But, in fact, the gases of combustion went through——

A. The gases of combustion went through and therefore there is no difference between this type of a firing chamber and a firing chamber directly in the oven. That is the reason I used, afterwards, an electric oven.

Q. At the time you started your work did you at any time see the report, TAC 90, dated March 22, 1938, which I show you?

A. I am not sure if I have seen this report. I don't recollect.

Q. Do you have the formula for the so-called light products that you used at the Axelson Foundry? You say there were three gallons of black and three gallons of light-colored core oils?

A. Yes.

Q. Do you have the formula for the light-colored products?

A. In my reports, without looking at them, I re-

(Testimony of W. H. Spiri.)

collect that the light product contained an albino asphalt emulsion and linseed oil.

Q. That is as you remember it?

A. That is as I remember [535] it without looking at any records.

Q. Would you refer to your notes on those products? Indicate for the record where your notes are for the work done on the two light-colored products? A. Yes.

Q. Will you refer to your notes please?

A. I would have to have the report in which I reported to my superior on the work done at the Axelson Foundry, which is one of the typewritten reports.

The Court: Probably counsel knows where it is.

Mr. Hackley: Do you happen to know which exhibit number that is, particularly?

Mr. Aurich: I think probably it is Defendants' Exhibit VV. I have a copy here that you can use, if you haven't the original? [536]

Mr. Hackley: I have it right here. I will show the witness the report Exhibit ZZ.

Q. Is that the one you refer to?

A. Yes, sir.

Q. Was the report ZZ written following your trip to the Axelson Foundry?

A. That is correct.

Q. Can you state what was meant by the reference to a carbon black Core-Min-Oil—and I refer you to cores 4, 5 and 6 on page 2 of Exhibit VV.

Mr. Aurich: Mr. Hackley, I do not want to in-

(Testimony of W. H. Spiri.)

interrupt your cross examination of this witness, but I am informed that this witness has no personal knowledge of the formulas, and I have a man here who does, and who will be a witness.

Mr. Hackley: I just want to find out what this witness knows about what he has called a carbon black Core-Min-Oil.

The Witness: The Core-Min-Oil contained in cans 4, 5 and 6, as stated here, contained carbon black, and that is all I knew about it.

Mr. Hackley: Q. Is it your testimony that all of your work at the Axelson Foundry was a failure? A. Yes, it is.

Q. Would you describe, referring to the report Exhibit VV, what you found with reference to the albino asphalt-linseed oil cores.

A. The asphalt—quoting from my report—the cores were found to be equally strong compared with the ones made with the linseed oil used by the Axelson Machine Company, and could be used for castings. As a matter of fact, the Axelson Machine Company very favorably commented on this light color.

Q. You said that you made a study of a wide variety of publications in the foundry art at the time you undertook your work?

A. That is correct.

Q. Do you have a list of that reference material in your notes [537] anywhere?

A. I have, if I may look at my—I made an in-

(Testimony of W. H. Spiri.)

dex, which you may examine, just to show where I can easily find——

Q. That is an index of your own notes?

A. That is right. Would you care to look at it? It just shows where I can find the various things.

Mr. Hackley: Mr. Aurich, it occurs to me it might be helpful if we had that index in the record. It seems to be exactly an index of the voluminous exhibits of the witness.

Mr. Aurich: I don't want it in evidence. It is of no value to me. It may be of value to the witness.

The Witness: I have notes to that effect on page 80 and 82 in my notebook No. 1, page 85, notes on foundries around the Bay Area on page 90 and 92, and I have a few notes on Quandt Oil on page 93. Recommendations of various oils for desirable properties of core oil is on page 97. Suggested formulas also for core oils, 99 to 102, and the notes from the articles, referring particularly to the oven type, is on page 103 to 117. These are general notes. Most notes were made on oven design and general foundry practice.

Q. You refer to the termination of your experiments in July or August 1939. Did you terminate those on the orders of someone, or simply because you had completed your work?

A. I terminated those on the order of my superior.

Q. Who was that?

(Testimony of W. H. Spiri.)

A. Well, at that time Mr. McSwain.

Q. Mr. McSwain told you what?

A. Mr. McSwain told me to cease working on this problem.

Q. And you discontinued your work then and there?

A. That is correct. I informed my own superior to that effect.

Q. You work at the Shell Company, do you not?

[538]

A. That is correct.

Mr. Aurich: Did.

Mr. Hackley: Did; I am sorry, Mr. Aurich. I did not mean to mislead the witness.

Q. Mr. McSwain is with the Shell Oil Company, Incorporated?

A. That is right.

Q. But you took your orders from Mr. McSwain on core oil?

A. Yes, I was loaned by Shell Development to the Shell Oil Company.

Q. You referred to the making of 770 cores in the course of your work; is that correct?

A. That is correct.

Q. That is the total number of cores that you made, roughly?

A. At the Vulcan Foundry.

Q. Eight months?

A. That is only at the Vulcan Foundry.

Q. I see. And all of those 770 cores were baked, were they?

A. Those were baked, yes, sir.

(Testimony of W. H. Spiri.)

Q. And all those 470 were pronounced by yourself to be satisfactory.

A. Not by myself. The 470 were accepted for castings by the foundry foreman.

Q. There were 300, then, that were unsatisfactory, is that correct? A. That is right.

Q. What kind of ovens were those 770 cores baked in?

A. In an indirect-fired gas oven.

Q. All of them? A. All of them.

Q. What do you refer to as an indirect-fired gas oven?

A. That is a completely insulated, asbestos insulated gas oven, where no flue gases of any kind can enter the oven box in which the cores are being baked. In other words, the flame is on the outside of this enclosed box and the flue gases pass through a chimney on the outside. [539]

Q. When you refer to an indirect-fired oven, that is the type of oven you mean, if I understand you, is that correct?

The Witness: May I have that question again?

(Question read.)

A. That is correct, or an electric-fired oven.

Mr. Hackley: Q. And electric-fired oven is likewise indirect in that the gases of combustion—

A. No. CO₂ gases within the baking room of the—

Q. Did you make any distinction between the

(Testimony of W. H. Spiri.)

cores you made in the indirect-fired oven and cores which you may have made in an electric oven?

A. I only baked standard 1 x 1 x 8 cores in electric-fired oven at the Emeryville laboratories and a few cores which I made in the electric-fired heat-treating foundry at the Axelson Machine Company.

Q. What percentage of cores, if any, in the electric oven were pronounced satisfactory?

A. None were pronounced satisfactory made with Core-Min-Oil.

Q. Even in the electric oven?

A. Even in the electric oven. They were below the strength which the Axelson Machine Company requires for its castings.

Q. So you had better results in the indirect-fired oven than you did in the electric oven, if I understand you, is that correct?

A. No, the results were the same, because as far as the oven construction is concerned, using electricity or using gas has nothing to do with a totally enclosed box where no gases come to the core.

Mr. Hackley: That is all.

Mr. Aurich: Just one question on redirect, your Honor. [540]

Redirect Examination

Mr. Aurich: Q. How did the baking time of cores made with this albino linseed oil that you have referred to compare with the baking time of cores made with the regular linseed oil that

(Testimony of W. H. Spiri.)

the Axelson Foundry was using in their commercial operations?

A. The baking time was a little longer by using albino linseed than it was for linseed oil.

Mr. Aurich: No further questions.

The Court: Step down.

WILLIAM L. EVERSON,

called for the defendants; sworn.

The Clerk: What is your name?

A. William L. Everson.

Mr. Aurich: This witness, your Honor, is being called out of order, and the pertinency of his testimony will not be apparent from it, so I might state briefly, in the course of work with this Core-Min-Oil, and to develop a certain test, the Shell Development Company had Emeryville prepare seven cans of various solutions to be used as a core oil. Those were then given to some other individuals, like Mr. Spotswood, who took them to the Vulcan Foundry, made cores with them, and then wrote a report. These men who actually did the work at the foundry had no knowledge of what was in the emulsions, and this witness on the stand is going to tell us that now.

Direct Examination

Mr. Aurich: Q. Will you give us your age, please, Mr. Everson.

A. Thirty-three.

(Testimony of William L. Everson.)

Q. And your residence?

A. 3070 Pleitner Avenue, Oakland.

Q. And your occupation?

A. Analytical chemist.

Q. You are employed by the Shell Development Company in that [541] capacity?

A. That is right.

Q. For how long a period of time have you been employed as an analytical chemist for the Shell Development Company?

A. For about four and one-half years.

Q. Are you a graduate of any university and, if so, will you tell us what university and what degree you hold?

A. I have a B.S. in Chemistry from the University of California?

Q. While you were employed by the Shell Development Company did you do any work on core oils?

A. Yes, I did.

Q. When was that work done by you?

A. That was done in the spring or summer of 1938.

Q. And you kept a record of the work you did at that time?

A. Yes, I did.

Q. Do you have it in that notebook before you?

A. It is in this notebook.

Q. That book, however, contains matters other than core oil notes?

A. Yes.

Q. Are all the notes in that notebook referring to core oils notes made by you and in your own handwriting?

A. They are.

(Testimony of William L. Everson.)

Q. And were they made at or about the date that the respective notes bear? A. They were.

Mr. Aurich: I will offer in evidence as Defendants' Exhibit ZZ photostatic copies of the portions of the witness' book that refer to core oils. This book was heretofore shown to Mr. Hackley, and he has copies of these pages.

Mr. Hackley: This is subject to correction if error is found, Mr. Aurich?

Mr. Aurich: Certainly.

(The photostats referred to were marked Defendants' Exhibit ZZ in evidence.) [542]

Mr. Aurich: Q. Now, do you recall preparing a number of solutions that were to be subsequently used as core oils?

A. Yes, there were seven of those solutions.

Q. And they were called Tuemmler's Solution?

A. Yes.

Q. Why were they called Tuemmler's Solution?

A. Because Dr. Tuemmler personally told me to prepare them and gave me the directions.

Q. And Dr. Tuemmler was your superior?

A. Yes.

Q. What did you do with them after you prepared them?

A. I prepared them in one-gallon batches. They were put in clean one-gallon cans, marked with the corresponding number, and that ended my connection with them.

Q. Will you refer to your notebook and tell us

(Testimony of William L. Everson.)

the proportions of the ingredients and the ingredients that were contained in the first six numbered cans, that is, cans 1 to 6?

A. Cans 1 to 6——

Q. Will you just tell us what page of your notebook you are referring to, Mr. Everson?

A. They are on pages 52 to 54 inclusive. No. 1 contained 800 cc's of water and 3200 cc's of sodium silicate. No. 2, 1000 cc's of water and 3000 cc's of sodium silicate. No. 3, 1,176 cc's of water and 2,824 cc's of sodium silicate. No. 4, 1,333 cc's of water and 2,667 cc's of sodium silicate. No 5 contained the same amounts of water and sodium silicate as No. 3, and in addition 5.6 grams of sodium hydroxide. No. 6 contained the same amounts of water and sodium silicate as No. 4, and in addition 26.8 grams of sodium hydroxide. I might add that these amounts of sodium hydroxide were added in the solution to give the solution the same total alkalinity as sample No. 2.

Q. You have the degree of alkalinity before you there of the [543] various solutions?

A. I determined the total alkalinity titratable with normal sulphuric acid, and I have it here roughly as cc's of normal acid to grams of material.

Q. Do you have anywhere in your notebook the formula that you used for making up solution No. 7, and if you do, will you please give it to us and state where in your notebook it is found? I would also like to have that in ounces and quarts, if you do not have that in the other measurements.

(Testimony of William L. Everson.)

A. That is also found on pages 52 to 54, the measurements being made in cc's, and at your request I recalculated them to ounces and quarts.

Q. Will you give them to us both ways, please, first in cc's and then in ounces and quarts.

A. In cc's I took 220 cc's of Solution A, which is elsewhere defined, and 880 cc's of saturated sodium fluoride solution, and these were mixed, and then oil was added; 2,500 cc's of sodium silicate.

Q. What is Solution A?

A. Solution A, on page 20 of the notebook, is defined as a solution containing 4 ounces of anhydrous aluminum sulphate in one-half gallon of water.

Q. Can you give us the percentage or the measurement of the ingredients used in this formula in quarts and ounces, please?

A. In quarts and ounces, 2.7 quarts of sodium silicate of 40 degrees Baume, 1.2 quarts of water, 0.45 ounces of aluminum sulphate, calculated as the anhydrous salt, 1.3 ounces of sodium fluoride.

Q. I understand, to clear the record, all this work was done in 1938, because the photostatic copy of the pages of the book I have offered do not indicate that; that is right, isn't it?

A. All this work was done in 1938. [544]

Q. Can you tell me the Baume degree of each of the solutions 1 to 7 from your notebook?

A. Yes, I can. Solution No. 1 had a Baume of 35.0; No. 2 of 32.1; No. 3 of 31.6; No. 4 of 30.2; No. 5 of 31.6; No. 6 of 30.6, and No. 7 of 32.0.

(Testimony of William L. Everson.)

Mr. Aurich: No further questions.

Cross Examination

Mr. Hackley: Q. I just have a couple of questions, Mr. Everson. All this work was done in the year 1938, and do I understand by looking at your notes that it was done between May 6 and July 21, 1938? A. Yes, that is correct.

Q. Your products Nos. 1 to 6, to reduce it to simple terms, were composed of various solutions of waterglass and no other added chemicals; is that correct?

A. That is not correct. 1 to 4 were waterglass alone; 5 and 6 had sodium hydroxide added.

Q. What was the purpose of adding the sodium hydroxide?

A. I do not know just what point was attempted to be established. I was instructed to prepare them with the same alkalinity as solution No. 2, and tests showed that they had that alkalinity.

Q. Solution No. 7 included as qualitative constituents sodium silicate, sodium fluo-silicate and aluminum sulphate?

A. Sodium fluoride, not sodium fluo-silicate.

Q. Sodium fluoride? A. Yes.

Q. Why did you select sodium fluoride? Was that just the instruction given you by Dr. Tuemmler? A. That was the instruction given me.

Mr. Hackley: That is all of this witness.

The Court: Call your next witness.

EARL HENRY SPOTSWOOD,

recalled; previously sworn. [545]

Mr. Aurich: This witness has already been sworn, your Honor. Like Mr. Spiri, this witness did considerable work on core oils. I shall not detail it, because it is all in his reports.

The Court: That is sufficient for all purposes.

Mr. Aurich: Yes, your Honor.

Direct Examination

Mr. Aurich: Q. Do you recall approximately how much time you spent working with core oils while you were with the Shell Company?

A. Approximately a year and three months.

Q. That is, you commenced about January or February 1938 and ceased about March of 1939?

A. That is right.

Q. Now, when you were doing this work with these core oils, can you tell us generally what type of core oils you used? I am particularly concerned with the solutions. Strike the question. Perhaps I can get at it this way:

You did work with a number of varying and various solutions and used those solutions together with asphalt emulsion to work out a core oil?

A. That is right.

Q. Now, will you tell us some of those solutions that you work with, please?

A. One of the solutions was Ruddle's Solution; another was sodium silicate. Those are the two main solutions.

(Testimony of Earl Henry Spotswood.)

Q. Where did you get the Ruddle Solution with which you worked?

A. Substantially all of the Ruddle Solution with which I worked was obtained from Mr. Ruddle.

Q. What was your purpose in working with sodium silicate?

A. During the course of our experiments we had established, or I had established to my satisfaction, that there was no difference between the properties of sodium silicate and Ruddle [546] Solution, and therefore during my later experiments I used sodium silicate rather than Ruddle Solution.

Q. In other words, you performed a series of tests or experiments to determine the relative efficiency of Ruddle Solution as compared with sodium silicate solution alone when used as a core oil and mixed with asphalt emulsion?

A. That is correct. We carried out a number of different experiments. In one series of tests we prepared cores with both Ruddle Solution, asphalt emulsion, and sand, and in the other case sodium silicate, asphalt emulsion and sand, and these were subjected to high water absorption by using a moist humidor, and we found that over a period of time both sets of samples absorbed approximately the same amount of water. Other cores were made in long, cylindrical shapes and were tested for warping over a period of time, and both cores prepared were found to have worn—in other words, those prepared with Ruddle and those prepared with sodium silicate.

(Testimony of Earl Henry Spotswood.)

At another time a series of castings were prepared at the foundry using four different formulas. These formulas varied in that one contained sodium silicate, asphalt emulsion and sand, and the others contained sodium silicate plus one of the salts which Ruddie had specified. Another contained sodium silicate plus both of the salts which he had specified. The third mixture contained the sodium silicate and the other salt which he had specified, and the fourth solution contained all of the salts, or, in other words, was the Ruddie Solution.

Core sand mixtures were made with all of these different formulas, and in all cases the workability of the finished castings were identical for all practical purposes.

Q. By the way, this work, and in connection with your other work that you did, I believe, is all set forth in your [547] notebooks and your reports in some detail, Mr. Spotswood?

A. Yes, it is, very detailed.

Q. We will not go into that. Just give us your best recollection generally like you have done. You did some work with the Tuemmler solutions?

A. I did.

Q. What were the results or conclusions you arrived at by means of working with the Tuemmler solutions? That is, were the cores made with Solutions 1 to 7 all substantially the same, or were there any differences that you could note?

A. For all practical purposes there was no difference. I might say that these seven solutions

(Testimony of Earl Henry Spotswood.)

which were made under Dr. Tuemmler's supervision were given to myself and Mr. Waller, and were taken to the Vulcan Foundry and tests were made in which these mixtures were mixed with sand, cores were prepared, and during the operations observations were made. In all cases there were substantially no differences between any of the mixtures. These tests were made in which we had no knowledge of any of the mixtures subsequent to the experiments.

Q. Now, where did you do your work while working with the core oils?

A. My work was done at the Martinez refinery, Shell Development Company, Emeryville, and at the Vulcan Foundry in East Oakland.

Q. Do you recall exactly when you first commenced work at the Vulcan Foundry?

A. Yes, I first commenced to work there on April 26.

Q. How do you fix that date?

A. By my expense account.

Q. Is that the document which I am now showing Mr. Hackley?

A. I believe it is. Yes, that is.

Q. You have mentioned a man by the name of Mr. Waller. Just what did he have to do with this core oil matter? [548]

A. Mr. Waller had a very small part in the core oil picture itself. He was attached to the sales department, and during this particular set of experiments which I have related he was the observer dur-

(Testimony of Earl Henry Spotswood.)

ing the experiments, I carrying on the actual work.

Q. During any of the time you were working with Mr. Waller did you ever see him do any actual work in the making of cores?

A. No, I did not. During all of this time I did the work myself.

Q. Now, I want to split up the period of time in which you worked with core oils just generally. Did you ever do any work with a ready-to-use core oil or stable mixture or single-package core oil?

A. I did.

Q. Do you recall approximately when that work began?

A. I believe it was about August 1938.

Q. Prior to that time your work had been with the type of core oil where you mixed the sodium silicate and the asphalt emulsion right in with the sand separately?

A. Or the Ruddle Solution, yes.

Q. Or the Ruddle Solution? A. Yes.

Q. Then you worked from August 1938 for some period of time with these ready-to-use core oils?

A. Yes, I did, and during this period. I also worked from time to time with the separate mixtures.

Q. Generally did you notice any difference in the results obtained in so far as a satisfactory core is concerned, whether you were using this ready-to-use core oil or whether you were using Core-Min-Oil, as Mr. Ruddle has defined it for us?

A. No, I did not. In both cases the cores at-

(Testimony of Earl Henry Spotswood.)

tained were unsatisfactory. In the difference between the two, that is, the separate mixtures and ready-to-use, different problems would arise, [549] but other than that, in both cases there were a number of difficulties which we were never able to overcome satisfactorily.

Q. These different problems that you would mention, that would arise because of the use of one rather than the other, were due primarily to the fact that you also had the question of stability to look at or to consider when you were working with a ready-to-use core oil?

A. That is correct. That was one of the difficulties.

Mr. Aurich: Now, I was just going to ask this witness to detail to us what he did generally. If your Honor wants to hear that at this time, I will be glad to proceed.

The Court: You have had enough detail here.

Mr. Aurich: I mean just generally, like the last witness, Mr. Spiri, did. I am not going into any detail here. I wondered if your Honor wanted to hear that before noon.

The Court: I am anxious to get through with this case as soon as I can; that is my anxiety.

Mr. Aurich: Very well.

Q. Now, will you tell the Court——

The Court: Maybe if we adjourned now until two you will summarize what you have in mind and save us a lot of time.

(Testimony of Earl Henry Spotswood.)

Mr. Aurich: I think we can save a lot of time, your Honor.

The Court: All right, we will adjourn until two o'clock. [550]

Mr. Aurich: I am very appreciative of your Honor's suggestion made before the noon adjournment that perhaps I could shorten this testimony up by giving the matter further reflection, and I am glad to be able to say I have been able to do so.

Q. During this period of time from January of 1938 until March of 1939 that you worked on core oils, can you give me approximately the amount of time spent by you?

A. Approximately 1,700 hours were spent carrying out work in accordance with this project.

Q. And you were in court this morning and heard Mr. Spiri's testimony? A. Yes, I did.

Q. And you heard him mention something about an indirect gas-fired oven that was used at the Vulcan Foundry for performing some test work on core oils? A. I did.

Q. By the way, you worked with Mr. Spiri in connection with the work at the Vulcan Foundry, as indicated in his foundry reports? A. I did.

Q. What was the size of that furnace that you used there, and where did it come from, just in a few words?

A. That oven—indirect oven, was approximately two by four by four feet in height, and was brought down from the Martinez Refinery to the Vulcan Foundry.

(Testimony of Earl Henry Spotswood.)

Q. Where was it located at the Martinez Refinery.

A. It was our regular laboratory oven, prior to being used out at the foundry.

Q. And during all of the time that you were doing this work at the [551] Vulcan Foundry, were you using the core oil in regular commercial foundry operations, or were they in the nature of laboratory operations?

A. All of our experiments, both at the refinery and at the foundry, were limited to laboratory applications, in that there was close technical supervision during all of the process.

Q. Can you tell me approximately how many cores you made with these core oils that you worked with from January of 1938 to March of 1939?

A. Oh, I would say—oh, I would say at least several thousand.

Q. Did you hear Mr. Spiri list the difficulties that he said he had encountered with this core oil, which list he gave on the witness stand here this morning?

A. I did.

Q. To shorten it up, did you encounter those same difficulties that he referred to?

A. I did; and more, too.

Q. Are the difficulties that you encountered all set forth in your notebooks?

A. Yes, they are completely covered.

Q. What was the result of your effort of a year and three months in working with these core oils, consisting of Ruddle Solution and asphalt emulsion

(Testimony of Earl Henry Spotswood.)

and sodium silicate, as to whether or not you were able to produce a good core oil that could be used in commercial foundry operations?

A. We were unsuccessful.

Q. Do you recall the occasion that you met Mr. Ruddle and he disclosed to you the formula for making his Core-Min-Oil—irrespective of the date, now; just the occasion? A. Yes, I recall.

Q. What, if anything, was said by Mr. Ruddle at the time that he gave you the formula for making his core oil, with respect to keeping his formula secret?

A. No, nothing was said that I recall. [552]

Q. What, if any, promise was made by you as to keeping secret the fact that Mr. Ruddle used asphalt emulsion as one of the ingredients of his core oil? A. I made no such promise.

Q. Will you state whether or not Mr. Ruddle at any time, or at any place, ever made a statement to you to the effect that the use of asphalt emulsion in core oil was a secret, and at which time he admonished you not to divulge it to anyone outside of the employees of your company?

A. No, he never said that to me.

Q. Did you recently, at my request, obtain some Shell Y-104 asphalt emulsion and ship it any place?

A. I did.

Q. Will you tell us what you did, please?

A. I went out to the asphalt plant and secured a barrel of our regular production Colas Premix emulsion Y-104. I had this barrel brought up to

(Testimony of Earl Henry Spotswood.)

the laboratory, and secured two samples from this barrel, one a five-gallon sample and another a fifteen-gallon sample, and shipped them to Mr. Harry W. Dietert, Detroit, Michigan.

Mr. Aurich: I think that is all, your Honor.

Cross Examination

Mr. Hackley: Q. You just referred to shipping two samples of asphalt emulsion to Mr. Dietert in Detroit.

A. That is right.

Q. Were those in metal containers, or what?

A. They were; they were in five——

Q. Were there labels on them?

A. They were in five-gallon cans, and had linen tags attached to the handles.

Q. What was marked on the linen tags?

A. The address, and the addressee, the contents of the can, and the place from where they were being shipped.

Q. You marked that yourself?

A. I had that typed on the tags.

Q. Did you see the tags after they were typed?

A. I did. [553]

Q. What did they say with reference to the contents of the can?

A. They had Colas Premix emulsion Y-104.

Q. Anything else?

A. That is, with respect to the substance in the cans?

Q. Did it say anything else on the tags, other than the address and that information?

(Testimony of Earl Henry Spotswood.)

A. And they had, "From Martinez Refinery, Shell Oil Company."

Q. Did you make any analyses of this product you sent to Mr. Dietert?

A. I didn't, but I understand it was analyzed.

Q. By whom? A. By Mr. Warren.

Q. That is just what you understand; you were not present when he did it, were you?

A. He told me that he had analyzed it.

Q. That is all you know about it yourself?

A. That is right.

Q. I would like to get an over-all picture of the general nature of the work as done by you in relation to the core oil project, and if I understood your testimony correctly, you commenced to work on that task sometime in the fore part of January, 1938, and continued until sometime in March of 1939, is that correct? A. That is right.

Q. If I understood your notes—and please feel free to refer to them if you wish in answering me—the first thing you did was to make some sand analyses, or cause them to be made, as the case might be? A. That is correct.

Q. That was done early in January of 1938, is that correct? A. February 8, I believe.

Q. And immediately after that you undertook to locate the source of trouble which had been defined as the production of inconsistencies in the baking of cores, where some cores that you had made under equal conditions came out good, and others bad, is that [554] correct?

(Testimony of Earl Henry Spotswood.)

A. That is right.

Q. You devoted yourself to that task until, if I understand you, the latter part of February, 1938, is that correct?

A. That is right.

Q. Now, at the end of that time you concluded that you had solved the problem of surface softening of the cores in baking by isolating that to the presence of the gases of combustion, CO₂, in the baking oven, is that correct?

A. That is right.

Q. Now, what did you do as your next test with reference to Core-Min-Oil after February 24th—as a general subject, now; I am not interested in the detail?

A. I don't know; I would have to refer to my notes and reports.

The Court: Q. As near as you can remember, state what you did.

A. I believe the next step was to determine a certain amount of data which could be used by the sales department for purposes of promotion.

Mr. Hackley: Q. Did you, after this work of February 24th, and, say, until the end of March, direct yourself primarily to the production at Martinez of cores made with what you called Core-Min-Oil?

A. I believe I worked on them during that period.

Q. Is that your present and best recollection of it?

A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Do you remember the formula that you used to make those cores? A. No, I don't offhand.

Q. Was it the formula given to you by Mr. Ruddle?

A. I believe I did use that formula at least some of the time.

Q. Did you possibly use other formulas, you think? A. I probably did.

Q. By the end of March, 1934, had you done, or observed being done, any work relating to attempts to put Core-Min-Oil in a single [555] package?

The Court: 1934?

Mr. Hackley: 1938; pardon me, your Honor.

Q. March 24, 1938, is the date I have in mind.

The Witness: I am sorry; I didn't get your question.

Mr. Hackley: I think I can repeat it.

Q. Prior to the end of March, 1938,—we will take that general date—had you made any tests or experiments, or were any done to your knowledge or under your supervision, relating to attempts to put Core-Min-Oil in a single package?

A. Prior to March, 1938?

Q. The end of March, 1938.

A. No, I don't believe there were any attempts made.

Q. Core-Min-Oil at that time was a two-package product, is that correct? A. That is right.

Q. Now, what did you do commencing with, say, the 15th of April, 1938, and on, say, until the 1st of June, with reference to Core-Min-Oil?

(Testimony of Earl Henry Spotswood.)

A. I did a lot of different things.

Q. Well, broadly speaking, what was the general nature of your work? Did you have any direct problem in mind that you were trying to work on, anything specific?

A. I should say that the majority of my work during this period was relative to the work being carried out at the Vulcan Foundry in which I endeavored to determine the information that could be used by the sales department for promotional purposes.

Q. You have used that phrase several times here. Will you explain just what you mean by that, what you were setting out to do? [556]

A. I mean that if the sales department were to attempt to market anything, that they would have to have certain data that they could use to present to the customer.

Q. Would that be your conclusion, or something that was told to you by the sales department?

A. I was instructed to get this data. In all of our products we generally have data which is used in their sale.

Q. What data were you trying to collect with reference to Core-Min-Oil?

A. We were trying to get a general background.

Q. That is, how it would act in a foundry, and what its attributes were for making a core, is that correct, and things of that sort?

A. That is right.

(Testimony of Earl Henry Spotswood.)

Q. And how it reacted to the pouring of castings, is that correct? A. That is right.

Q. You were making these strength tests that you referred to? A. Later on, in June.

Q. Now, up to, say, the end of June, had you been doing all of the things that I mentioned, other than perhaps the strength tests that I have referred to? A. Yes, I think I did.

Q. What formula were you using to develop the sales data during this period up to, we will say, the end of June, and after the middle of April, 1938?

A. The majority of the work during this period was done using a formula of 93 percent sand, $4\frac{1}{2}$ percent Ruddle Solution, and $2\frac{1}{2}$ percent asphalt emulsion.

Q. Based upon a sand content of 1750 cc's, what would be the number of cubic centimeters of each of the other two ingredients in that formula?

A. I would have to calculate it out.

Q. Can you do that?

The Court: It won't serve any purpose here.

Mr. Hackley: It would have the advantage, your Honor, of [557] giving us the same measuring stick that we have all through the balance of the testimony.

The Court: He gave the measuring stick.

Mr. Hackley: Q. What other formulas did you use for Core-Min-Oil during this same period, from the middle of April until the end of June, 1938?

(Testimony of Earl Henry Spotswood.)

A. I used many different formulas.

Q. Where did you get those formulas?

A. You don't get formulas; you try out formulas.

Q. Oh, these were experiments you were making?

A. That is right.

Q. You were not following any specific formula given to you by Mr. Ruddle?

A. No.

Q. You were making variations in the formula that was given to you by Mr. Ruddle?

A. Certainly, variations were made in the formula.

Q. During this period we are talking about?

A. Some isolated experiments were carried on, in which formulas were varied in order to determine certain variables.

Q. The bulk of the work was done, however, with Mr. Ruddle's original formula that you have just described?

A. If the formula which I quoted is one of Mr. Ruddle's original formulas, yes.

Q. Put it this way: The bulk of the work that you did in this period was with the formula that you just gave?

A. That is correct.

Q. Ninety-three percent sand, four and a half percent solution, and two and a half percent asphalt, is that correct?

A. That is right.

Q. Now, from the end of June down to the end of, say October, what were you doing with reference to Core-Min-Oil?

(Testimony of Earl Henry Spotswood.)

A. Again, a great number of things were being done. One of the [558] principal things which comes to my mind is that we were carrying out a considerable amount of work in order to determine strength and friability of Core-Min-Oil mixtures.

Q. What else were you doing in that period?

A. I don't recall; I would have to refer to my notes. It was various minor investigations of one sort and another.

Q. You were making cores, though, all during this period, weren't you? A. Yes.

Q. And pouring castings with those cores?

A. Occasionally a casting would be made.

Q. Approximately how many cores did you make between the 1st of January, 1938, and say the end of October, 1938? A. How many cores?

Q. Yes—with Core-Min-Oil.

A. I don't know; I wouldn't be able to estimate.

Q. Well, you said you made several thousand cores altogether. Now, what percentage of those would you estimate was made in the earlier period?

A. Well, it is 50 percent of the time; I would say that I probably made 50 percent of 2,000, or 1,000 cores.

Q. You would estimate that you made cores almost evenly, month by month, during the whole period we are talking about, from the 1st of January to March of 1939—January, 1938, to March of 1939?

(Testimony of Earl Henry Spotswood.)

A. Well, exclusive of the first several months, I would say that would be a fair basis for estimation.

Q. And starting with the month of April and running through the following March, would you say that these several thousand cores were very largely made during that period?

A. I would say so.

Q. And about evenly, month by month?

A. I would say so.

Q. And what did you do with reference to Core-Min-Oil between the end of October, 1938, and the time that you terminated your work [559] on core oils, if I understood that was what you did, in March of 1939?

A. If you mean on Core-Min-Oil mixtures comprising Ruddle's Solution or sodium silicate and asphalt emulsion and sand, I was conducting tests on emulsions which were prepared by Shell Development Company, composite emulsion, or so-called ready-to-use core oils, to determine their usability, during this period, as well as still working on the separate materials and with respect to the various difficulties that they comprised.

Q. Work, I believe you testified, was being done on that score by Mr. Warren, is that correct?

A. That is so.

Q. And Doctor Wright?

A. That is right. I might mention that in my previous answer I had mentioned that I had worked on those. I meant from the standpoint of

(Testimony of Earl Henry Spotswood.)

the applications end. In other words, I had nothing to do with chemical preparation; I only tested the finished products.

Q. When either Mr. Warren or Doctor Wright turned out a product which they referred to as a stable emulsion, then you would try it out in the foundry, is that correct?

A. Either the foundry or Martinez laboratory.

Q. With reference to making cores, I suppose?

A. Sand mixtures and cores. [560]

Q. When did you first start making experiments with sand mixtures and cores utilizing emulsions, so-called stable emulsions prepared either by Mr. Warren or Doctor Wright?

A. I don't recall offhand. I believe it was in October, or somewhere along in that period.

Q. 1938? A. Yes.

Q. Do I understand that when you use the term "core oil," you refer to any core oil which includes asphalt emulsion and sodium silicate, either with or without the other ingredients, such as aluminum sulphate and sodium fluosilicate?

A. Not necessarily. I stated in my answer that if you consider that as such, that is what I was working on.

Q. Do you consider Core-Min-Oil to be that? Is that what you meant?

A. Core-Min-Oil, as far as my understanding is concerned, consists of asphalt emulsion, Ruddie Solution, and sand.

(Testimony of Earl Henry Spotswood.)

Q. That is the true Core-Min-Oil, isn't it?

A. That is right.

Q. Now, when did you start work with a core oil where you omitted the constituents of Ruddie Solution and used only sodium silicate and asphalt emulsion for the making of cores?

A. I began to experiment on the sodium silicate very early, probably in April, 1938.

Q. And at what point did you reach the conclusion that you gave to the Court this morning, that cores prepared with sodium silicate in lieu of Ruddie Solution were substantially the same, if not the same, in all properties, as those made with Ruddie Solution?

A. I believe in about June.

Q. 1938?

A. That is right.

Q. And from then on did you devote yourself, in so far as sodium silicate-containing cores were concerned, to the formulas where aluminum sulphate and sodium fluosilicate were omitted? [561]

A. Substantially, yes.

Q. You have no present recollection of making any more cores with the Ruddie Solution after that, have you?

A. From time to time I believe further cores were made with Ruddie Solution, but substantially all the work was with sodium silicate.

Q. Did you ever do any work on the core oil employing linseed oil and albino asphalt?

A. Yes, I did.

Q. When did you start that work?

A. I don't recall. I believe it was somewhere in

(Testimony of Earl Henry Spotswood.)
the beginning of 1939, possibly later.

Q. Is that work referred to in your notes?

A. Yes, it is.

Q. I show you Spotswood Exhibit 3——

Mr. Aurich: "Spotswood Exhibit 3"?

Mr. Hackley: Spotswood notebook 3, which is——

Pardon me, Mr. Aurich——

Q. ——Exhibit 50, and for reference I hand you your other two notebooks and ask you particularly with reference to the last notebook, if there are references to your work with the albino asphalt in there? A. Yes, there are. [562]

Q. How long did you continue working with core oils?

A. March of 1939. What kind of core oils?

Q. Any kind of core oils.

A. There is a note, January 8, 1940, with regard to core oils, which is apparently the last date.

Q. What did you mean when you testified on direct examination that your work on this subject ran only until March of 1939?

A. That was with respect to Core-Min-Oils.

Q. But you did continue working on the subject of core oils after March of 1939, is that correct? A. At a later date I did.

Q. When did you resume work on core oils after March of 1939? Use your notes if you have to for that purpose. A. In August 1939.

Q. Do you have the exact date?

(Testimony of Earl Henry Spotswood.)

A. August 11.

Q. Would you just give the page numbers of your notebook, Exhibit 50, which refer to the work on albino asphalt-linseed oil products, and the dates of those entries.

A. Page 78, August 11, 1939; page 87, no date.

Q. The last page would be some time after the August 11 date; is that correct? A. Yes.

Q. Continue.

A. 88, no date; 95, no date; 96, no date; and 105, January 8, 1940.

Q. On whose instructions did you resume work on core oils on August 11, 1939?

A. On my superior's.

Q. Who was that?

A. I don't recall just now. I have had a number of shifts over a period of time. It would come down through the chief technologist.

Q. You talked about warping of the core and making certain tests to determine warping characteristics of cores made with Core-Min-Oil, is that correct? A. That's right. [563]

Q. Did you make any specific notes on your warping tests? A. Yes, there are notes.

The Court: What do you mean by "warping"?

The Witness: I mean that certain cores which have a long, narrow section are susceptible to warping or bending over a period of storage time, and in the event that they are bent they would be unsatisfactory.

The Court: Proceed.

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: Q. Did you make any notes of your work on core warping? A. Yes.

Q. Do you have any way of quickly referring to your notebooks here and pointing out where that is found? A. On page 6.

Q. Of which of your notebooks?

A. Of notebook 2.

Q. That is Exhibit 49, I believe? A. Yes.

Q. Are all the notes of work done by you with reference to core warping on that one page?

A. I believe they are.

Q. Did you make any comparisons of the baking time of cores made with Core-Min-Oil as against other commercial core oils? A. Yes.

Q. Do you recall what your findings were in that connection, at least just generally?

A. Yes, generally, for small-sized cores we found that the—or I found that the Core-Min-Oil baked in a shorter period of time.

Q. What do you refer to here as Core-Min-Oil, the original Ruddle product or some variation of that formula?

A. It doesn't matter; either the Ruddle Solution or the sodium silicate worked in this case.

Q. To bake in a shorter time?

A. To bake in a shorter period of time.

Q. Do you recall making any baking tests with reference to [564] six-inch Merco-Nordstrom valves?

A. I recall that several cores of that nature were made. I don't know whether they were baking tests.

(Testimony of Earl Henry Spotswood.)

Q. Do you recall whether or not those cores made with Core-Min-Oil baked faster than cores made with linseed oil of the same type?

A. No, I don't.

Q. Do you have any notes on that work?

A. There are notes in my book on that six-inch core.

Q. Can you turn to those?

A. Yes, I have the notation.

Q. Could you find any reference to baking times in those notes? A. No.

Q. First tell where your notes are in the record, please.

A. On page 24, book 2, Exhibit 49, and again on page 27 there are notes relating to six-inch Nordstrom valves.

Q. Do you show any baking time at all on either one of those pages? A. No, I do not.

Q. What were those made of; do you show the formula? A. Yes.

Q. What was the formula used?

A. 93 per cent dry sand, 4½ per cent Ruddle Solution, and 2½ per cent Y-104 emulsion.

Q. Does that apply to all of the purported tests on those two pages mentioned?

A. It does with respect to those particular cores.

Q. To Merco-Nordstrom six-inch valve cores?

A. Yes.

Q. You have stated that you heard all of the

(Testimony of Earl Henry Spotswood.)

difficulties purportedly named by Mr. Spiri with reference to cores made with Core-Min-Oil and their use, I take it, in the foundry, and you state that you agree with them, and have even gone further, that there are other difficulties which he did not mention, which you recognized. Now, will you name the difficulties [565] which you are endorsing in that manner?

A. I can't remember all the difficulties that he enumerated.

Q. What are the difficulties that you think existed with Core-Min-Oil cores?

A. First, the Core-Min-Oil cannot be baked in a direct-fired oven; the Core-Min-Oil evaporates rapidly on the bench, causing a loss in strength of the mixture; it settles in the sand mix; it crusts over; it sticks to the tools, the equipment, and in the cope; it is highly susceptible to humidity; it has a very poor strength-collapsibility relationship. Core oils prepared in the ready-to-use packages were too viscous.

Q. That is the single-package product?

A. Single-package.

Q. What do you mean by "viscous"?

A. I mean that the—a good many of the mixtures would not pour from the cans; the mixtures would not mix evenly with the sand and would form pellets. The materials were not of enough concentrated strength; that is, you had to use too high a quantity of emulsion with the sand,

(Testimony of Earl Henry Spotswood.)

causing too wet a sand mix. That is all I can recall offhand.

Q. If I understood your testimony you recognized the existence of this inability to bake in a direct-fired oven in the presence of CO₂ in February of 1938? A. That is right.

Q. And at that time determined that these cores had to be baked in an indirect-fired or electric oven; is that correct?

A. Free from any combustion gases.

Q. Pardon?

A. Free from any combustion gases, yes.

Q. Now, when did you first observe that these cores made with Core-Min-Oil evaporated too rapidly?

A. That first became obvious when we started working in the Vulcan Foundry.

Q. That would be along in April 1938?

A. May 5, 1938. [566]

Q. It was immediately obvious, I take it?

A. It was.

Q. And the crusting over, I suppose that was observed there at the same time? A. It was.

Q. When you refer to evaporation rapidly, you refer to evaporation on the bench of the unformed sand?

A. Either on the bench, in the bin, or wherever the material happens to be stored.

Q. Did you ever try to overcome that problem by covering the material on the bench with a damp sack? A. We did.

(Testimony of Earl Henry Spotswood.)

Q. Did you find that solved the problem?

A. It was slightly effective.

Q. You don't recall whether it was sufficient for the purpose or not?

A. I recall it was not.

Q. When did you first note this settling of the mix; about the same time?

A. I believe it was around that time.

Q. And that pellet formation, I suppose you observed that about the same time?

A. No, that came in at a later date with respect to the ready-to-mix mixture.

Q. That only applied to the Ruddle ready-to-mix product, isn't that correct?

A. At that time, under the conditions of mixing that we were using, we never did have any trouble mixing the separate ingredients, because we always hand-mixed and got a thorough mixture.

Q. When you went to mechanical mixings you didn't do as good a job; is that what you tell us?

A. No, I didn't say that.

Q. I want to know what you mean by what you said.

A. I am saying that in the manner in which we mixed the stuff at the foundry we never ran into any difficulty on the separate mixtures. We always made hand mixes in most cases. In one case we did make a large mixture in the regular Vulcan mill and [567] the mixture was satisfactory. It was the Mueller type or, I believe, the Simpson Mixer.

Q. When was this, now, about what date?

(Testimony of Earl Henry Spotswood.)

A. I don't recall the exact date.

Q. Can you put it in any month of 1938?

A. Oh, June, July, somewhere in there.

Mr. Hackley: That is satisfactory for the purpose.

Q. This pellet formation you noted then, at about what time, for the first time?

A. Oh, that was around October or November.

Q. That is when you were working with the single-package product?

A. That is right—no, the ready-to-use product.

Q. What do you mean, the ready-to-use product?

A. Yes, that is right; you said single package.

Q. That is the single-package product, isn't that correct?

A. Yes; I misunderstood you.

Q. Now, this sticking to the tools and equipment — sticking to the cope, you observed that when?

A. On the first day we started to work at the foundry.

Q. That would be in April 1938—May, rather, 1938?

A. That is right.

Q. When did you first observe this susceptibility to humidity? What would you call that? Moisture absorption property or something of that sort?

A. Yes, water absorption tests were made in April 1938, although the actual susceptibility to humidity that we are talking about was not observed until probably November or December.

(Testimony of Earl Henry Spotswood.)

Q. How do you distinguish between water absorption tests and susceptibility to humidity?

A. Well, they are actually the same thing. [568]

Q. Each involved the hygroscopic characteristic of the core? A. That is right.

Q. And a core which will tend to absorb water would tend to absorb moisture from the atmosphere? A. Yes.

Q. When did you first conclude that there was a problem involved in this question of the relation between collapsibility or friability on the one hand, and working strength on the other?

Mr. Aurich: I think for the purpose of the record, I would like to have it noted that the witness is giving these answers without referring to his notes, in case any conflict should arise at some later date.

Mr. Hackley: The witness has his notes there.

The Court: Let the record show that that is done with the encouragement and suggestion of the Court.

A. That became fairly obvious after we had gathered together a considerable amount of data on the strength and friability along in June, 1938.

Mr. Hackley: Q. Now, you named two difficulties, and I didn't quite understand what you meant by either one. One was the problem arising from a too wet mix being required, or something like that—I don't want to misquote your answer, so I wish you would tell me just what you meant by it.

A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. You said something about no concentration.

A. A number of the ready-to-use mixtures were of a low concentration of active ingredients, that is, sodium silicate and asphalt emulsion, which was necessitated by the fact that we had to add other materials in order to make a stable emulsion, and when this [569] condition was achieved we therefore had to use more of the stable emulsion with the sand in order to get an equivalent strength to what we obtained with less separate ingredients previously.

Q. When did you first observe this condition?

A. This condition was observed soon after we began to experiment with single-package or ready-to-use material.

Q. When would that be, approximately?

A. In October, I believe I testified.

Q. One other thing here—did you want to refer to your notes for that? Please do, if you wish; I don't want to mislead you on this.

The Court: For purposes of our case, what would be the difference whether it would be in October or August?

Mr. Aurich: I think your Honor will find that when the case is argued before the Court there is going to be a very significant argument made by plaintiffs' counsel as to whether it was prior to the time that the Shell Company exercised the option.

The Court: I understand all that.

Mr. Aurich: That is his purpose. To me, so far

(Testimony of Earl Henry Spotswood.)

as I am concerned, it makes no difference. From my view on the case, it doesn't make any difference when they occurred.

The Court: Let's get through with this witness.

Mr. Hackley: I am nearly completed, your Honor.

Q. Did you verify your time there?

A. Yes; October is essentially correct.

Q. Now, do you have in your records the formula which you employed for making cores with the linseed oil-albino asphalt product?

A. I have records of those various mixtures.

Q. Will you state the formula of that product which you found best, for the record, please?

A. I wouldn't be able to do that.

Q. Why is that?

A. Because from the data we obtained here we [570] don't know which one is the best kind.

Q. What would you consider to be a typical linseed oil-albino asphalt product?

A. There are no typical mixtures; there are different variations of them. One will have certain properties and another one other properties.

Q. You would vary the formula to achieve the different desired results, is that correct?

A. That is right.

Q. Did you use a straight linseed oil in that product?

A. One of the components in a number of cases was raw linseed oil.

(Testimony of Earl Henry Spotswood.)

Q. Did you use other variations of linseed oil?

A. What do you mean by "other variations"?

Q. Well, you spoke of using raw linseed as one of the components. A. Yes.

Q. On some of the occasions. Now, what did you use on other occasions?

A. Well, I should say that in all cases one of the components was linseed oil.

Q. Did you prepare this albino asphalt-linseed oil emulsion product yourself, or was it prepared by someone else and sent to you for testing?

A. Did you say "emulsion"?

Q. Albino asphalt, I should say. If I said "emulsion," I mean "albino asphalt."

Mr. Aurich: May it please the Court, if the Court is interested in hearing about this albino asphalt-linseed, I will make no objection, but it serves no purpose in this case, and it is an utter waste of time, and I object to it on the ground of gross immateriality.

Mr. Hackley: I would be very glad to go into the materiality.

The Court: What is the materiality?

Mr. Hackley: Just this: This product, as we have seen from the reports which this company has produced in evidence here [571] particularly the report which I read to your Honor the other day, an exhibit to Doctor Wright's testimony, show that after the attempt was made by Shell to cancel this contract, they were advised by their technical divisions to market the product albino asphalt-linseed

(Testimony of Earl Henry Spotswood.)

blend. Now, under the contract itself, there is an obligation on the part of the Shell Company to market Core-Min-Oil, or any other product which they prepared along this line, and to pay to Peck and Ruddle a royalty on it. Now, the answer——

The Court: The fact is that they didn't try to market anything, is that correct?

Mr. Hackley: That is correct; they made no effort to market anything.

The Court: That is the answer, so far as this Court is concerned.

Mr. Aurich: Of course, I don't agree with counsel's interpretation of that portion of the contract.

The Court: That is the theory of his case.

Mr. Aurich: I can point out the very decisive answer to that very shortly; in just about less than two minutes. The only clause in the contract requiring Shell to diligently attempt to market and sell anything is paragraph 2, and it reads as follows; just the two lines:

“Shell shall diligently attempt to sell Care-Min-Oil”——

we know what that is——

——“and other compositions for foundry use as covered by said applications or later patents.”

Now, the word “said,” there, refers to the three Ruddle applications mentioned in the forepart of the contract, and there isn't one of those which relates to albino asphalt or linseed oil, or other sorts

(Testimony of Earl Henry Spotswood.)

of ingredients, and if you follow counsel's argument [572] to its extreme, it would mean that Shell could be required, under his construction, to go out into the market today and buy Linoil, for example, and sell it, and pay Peck and Ruddle a royalty, which, of course, is ridiculous.

The Court: Is that all from this witness?

Mr. Hackley: I think I have an unanswered question. Whatever it is, I would like to hear it. May we have it read, Mr. Reporter?

(Question read.)

Mr. Hackley: So that the record will be clear, I will reframe the question.

Q. Mr. Spotswood, you have told us of your work with the albino asphalt-linseed product. Did you prepare that yourself, or was it prepared by someone else and sent to you for use?

A. I prepared my own.

Q. The ones that you used in your own tests?

A. Yes.

Q. Where did you get the suggestions for the formula? Was that your idea, or was it sent to you by someone else in the company?

A. I got some of the data from the reports put out by Shell Development Company.

Q. What report do you refer to? Doctor Wright's reports? A. Yes.

Q. Just to identify that, do you refer to the material contained in Wright Exhibit 54?

A. Yes, that is right—

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: That all.

The Witness: I might add that——

Mr. Hackley: Q. Oh, pardon me, sir.

A. (continuing): —that we get these—all these reports which you mentioned here, the one you showed me, as a routine matter.

Q. They are circulated regularly through the company and would come to your attention?

A. Through the company, and would [573] come to us.

The Court: Step down.

Mr. Aurich: Doctor Wright.

The Court: How many witnesses have you got left?

Mr. Aurich: I have got four left, all very short.

The Court: We will take a recess and then we will conclude with those witnesses. I expect to conclude this case today.

Mr. Aurich: I can't control the cross, but I am sure we can so far as the direct is concerned.

(Recess.)

Mr. Aurich: Counsel and I have agreed to dispense with the necessity of calling a witness—I am sure that will please the Court, at least—and we have stipulated that if Doctor Wright were recalled as a witness, he would testify that he prepared Defendants' Exhibit YY for identification; that the formulas therein are the formulas that are used in the corresponding test numbers in Defendants' Exhibits MM and NN, and where they are found in

Doctor Wright's notebook. That is, of course, subject to correction if error is found.

I now offer Defendants' Exhibit YY in evidence.

(The folder heretofore marked Defendants' Exhibit YY for identification was received in evidence.)

Mr. Aurich: Mr. Waller.

I think he has been sworn; he was on the stand.

ARTHUR C. WALLER,

Recalled for the Defendants; Previously sworn.

Direct Examination

Mr. Aurich: Q. You are the same Mr. Waller who testified here before, or who was called as a witness? A. Yes. [574]

Q. Will you tell us just briefly and generally what experience you had in foundry practice and coremaking up to the time that you commenced to act as an observer of Mr. Ruddle's work?

A. Only the experience of the observation in the two foundries, the Macauley Foundry and the Vulcan Foundry. I have never had any experience in actually making cores—it was observation purely—and that extended up to the time about mid-June of 1938 from about mid-February.

Q. In other words, a period of about four months is all the experience you have ever had in your life with foundry practice and core making?

(Testimony of Arthur C. Waller.)

A. That is right.

Q. And that experience consisted of merely acting as an observer, as you have just described?

A. Yes.

Q. Do you recall the action when Mr. Ruddle told you that he used asphalt emulsion in his core oil? I do not mean the date, Mr. Waller, but do you recall that he did mention that to you?

A. Yes.

Q. Now will you tell the Court, please, what, if anything, Mr. Ruddle said about keeping anything secret?

A. I don't recall anything about keeping it secret.

Q. Did Mr. Ruddle ever tell you that he had a new core oil which contained asphalt emulsion and another ingredient, and that asphalt emulsion, as a core oil, was a secret with him, and he did not want you to tell anybody about it?

A. No.

Q. Did he ever make any such statement to you at any time?

A. Not to my recollection.

Q. In connection with your brief period of time working with or observing Mr. Ruddle's activities, did you make any survey of the market in the United States to determine how much core oil could be sold, if any?

A. No, I did not. [575]

Q. Did you have any knowledge of your own on that subject at all?

A. No, I had not.

Q. Did you ever have any knowledge of your own during the period of time that you were work-

(Testimony of Arthur C. Waller.)

ing with this Mr. Ruddle, as to the number of foundries using direct-fired ovens as compared with those using indirect-fired ovens?

A. Nothing in the way of accurate information. It was discussed among us many times, but nothing was ever furnished me, nor did I ever know of any definite figures.

Mr. Aurich: That is all.

Cross Examination

Mr. Hackley: I just want to find out one thing.

Q. Mr. Waller, you say "discussed among us." Whom do you mean? A. I beg your pardon?

Q. In your last answer you said, "It was discussed among us . . ." Now, who do you mean?

A. Between Mr. Ruddle, Mr. Peck, and whoever—Mr. Spotswood or the group—the group that was together many times, riding back and forth to and from the foundry.

Q. And discussed with Mr. McSwain, too, I presume?

A. The discussions were very general; the expressions of opinion about what we were engaged in.

Mr. Hackley: I will rely on my deposition for the cross examination of the witness.

The Court: Step down.

Mr. Aurich: That is all, Mr. Waller. Thank you, Mr. McSwain, please.

JOHN F. McSWAIN,

Recalled for Defendants; Previously sworn.

Mr. Aurich: This gentleman has heretofore been sworn, your [576] Honor, and I interrupted his direct examination right in the course of the proceeding. I am going to abandon what I had planned to produce by this witness and proceed along another line.

Preliminary to my examination, I will offer in evidence a letter dated April 18, 1938, from Mr. J. F. McSwain to Mr. Harold Martin of the Vulcan Foundry, which counsel has stipulated may be admitted without objection, and I will ask that it be marked Defendants' Exhibit AAA. This letter is a letter written by this witness making some offers to the Vulcan Foundry. I do not believe I will take the time to read it now.

(The letter referred to was marked Defendants' Exhibit AAA in evidence.)

Direct Examination

(resumed)

Mr. Aurich: Q. I will show you a document, Mr. McSwain, which has been marked Defendants' Exhibit GG for identification, and ask you if you can recognize that, and, if so, state what it is and where you got it, just briefly, please?

A. These are notes that were made in my office by myself, I think on the afternoon that we signed the contract; either the afternoon we signed the contract or the next day.

(Testimony of John F. McSwain.)

Q. Where did you get the information that appears on that exhibit? A. From Mr. Ruddle.

Mr. Aurich: I now offer in evidence the sheet of paper which has heretofore been marked Defendants' Exhibit GG for identification.

(The notes referred to, heretofore marked Defendants' Exhibit GG for identification, were received in evidence.)

Mr. Aurich: Q. Now, I want you to take in the entire period of time encompassed by this Core-Min-Oil matter, Mr. McSwain, from Mr. Ruddle's first visit, let us say, in December, 1937, or January, [577] 1938, up until the time Shell cancelled the contract in July of 1939, and I would like to have you tell the Court briefly and generally what your experience in foundry practice and coremaking was, taking into consideration that entire period of time, as well as what, if anything, you knew about it prior thereto.

A. Well, I think I have testified here previously that I knew nothing whatever of foundry practice before Ruddle came to my office and told me that he had a core oil and asked me to go to Macauley's Foundry with him.

Is it necessary to go over Ruddle's visit to me? I think that is already covered.

Q. No; I think if you confine your answer to my question, it will be sufficient.

A. We thought that there was a possibility for developing a market for emulsion——

(Testimony of John F. McSwain.)

Q. I don't want to interrupt, Mr. McSwain; all I want you to do is to tell the Court how much experience you personally had in foundry practice and coremaking from January, 1938, or December of 1937, until July of 1939.

A. Well, I had no experience in coremaking.

Q. Can you tell us how many times you were in a foundry, or in foundries, during that period of time—just an estimate?

A. I couldn't—oh, possibly a half a dozen times.

Q. Do you recall the occasion when Mr. Ruddle first told you that asphalt emulsion was used as one of the ingredients of his core oil?

A. Yes.

Q. What, if anything, was said by Mr. Ruddle at that time, or at any subsequent time, about the fact that the use of asphalt emulsion as a core oil was secret?

A. Nothing.

Q. Did he ever, at any time, tell you that the use of asphalt [578] emulsion as a core oil was a secret?

A. No, sir.

Q. And that you were enjoined not to discuss it or disclose it to anyone outside of Shell Company representatives?

A. No, sir.

Q. Did you ever make, or have made for you, a survey of the market for core oils?

A. No, sir.

Q. At any time?

A. No, sir.

Q. Did you ever make any survey, or have any survey made at any time, as to the number of foundries in the United States that used electric ovens?

A. I did not.

(Testimony of John F. McSwain.)

Q. Did you at any time or place ever tell Mr. Ruddle that there were many foundries in the United States that were electrically-heated?

A. No, sir.

Q. Do you know whether that is a fact or not?

A. I have no information.

Q. What information do you have today, if any?

A. No more today than I had then.

Q. Do you recall the shipment of some core oil to the Axelson Foundry in 1939 sometime?

A. Well, I know that we shipped some down there.

Q. And it was in 1939? A. Yes.

Q. Do you recall having a conversation with Mr. Ruddle following the shipment of that oil to the Axelson Foundry, at which time you told Mr. Ruddle that there was a market for Core-Min-Oil of 60,000,000 gallons per year, and that there was a good likelihood of a market price of 50 cents per gallon being established or set for that oil?

A. I do not.

Q. Did you ever know that there was a market, as Mr. Ruddle has testified, of 60,000,000 gallons per year of Core-Min-Oil?

A. The only information we had with regard to the quantities of [579] Core-Min-Oil—or core oils that were used in the United States, came from Ruddle.

Q. By the way, do you recall how the core oil that you shipped to the Axelson Foundry was re-

(Testimony of John F. McSwain.)

ceived by that foundry, that is, did they tell you it was a good core oil, or a bad core oil?

A. They told me it was a bad core oil.

Q. Did they subsequently buy some of that core oil? A. They never bought a gallon.

Q. Do you recall any discussion with Mr. Ruddle concerning albino-linseed oil?

A. No, I do not.

Q. Do you know of your own knowledge how the baking time of cores made with albino-linseed compares with cores made with regular linseed oil that is used in foundries? A. I do not know.

Q. Do you know which, if any, has the faster baking time? A. I do not know.

Q. Did you ever tell Mr. Ruddle that cores made with albino-linseed oil had a much faster baking time than cores made with regular linseed? A. No.

Q. Do you know generally the business of the Shell Development Company, one of the defendants in this suit? A. Yes, sir.

Q. Are they a manufacturing or selling concern?

A. They are not.

Mr. Aurich: I think that is all, your Honor.

Cross Examination

Mr. Hackley: Q. Is Shell Development Company in any way related to the Shell Oil Company, Incorporated?

Mr. Aurich: I object to that as calling for the conclusion and opinion of the witness.

The Court: If he knows he may answer.

(Testimony of John F. McSwain.)

The Witness: Shall I answer? [580]

The Court: Q. If you know, you may answer it.

A. I assume that to be the case, although I do not know that of my own knowledge.

Mr. Hackley: Q. You work continuously and closely together? A. Yes.

Mr. Hackley: Your Honor, I have previously offered in evidence, and there is offered only for identification, because of the question of the interpretation of Rule 26 (d), the deposition of this witness, which would comprise my cross examination of the witness. In the interest of time, I would like to re-offer that deposition as my cross examination, in which case I will not have any cross examination to make.

Mr. Aurich: I will have to stand on my legal objection to that.

The Court: Objection sustained.

Mr. Hackley: Q. Did you make any representations to Mr. Ruddle at any time, regarding the sales force, size of the sales force, and the ability of the sales force of the Shell Oil Company?

A. The extent of our sales force was probably discussed. What you mean by "representations" is not clear.

Q. Did you describe your sales force?

A. I could not describe it in any detail, because I don't know.

Q. I will put it this way: Do you remember saying anything to Mr. Ruddle about the fact that

(Testimony of John F. McSwain.)

the Shell Company had something like 5,000 salesmen throughout the United States?

A. Well, I have never known whether they had 5,000—I will say, no, I don't know how many salesmen they have—never have known.

Q. Do you remember making that same general statement, perhaps using the word “thousands,” referring to the number of salesmen in the company?

A. I do not recall making the statement. [581]

Q. You would not say you did not make such a statement? A. No.

Q. Do you remember saying, in connection with the salesmen of the Shell Company, that if Shell were to take on Core-Min-Oil, they would be in a position to call on virtually every foundry in the United States at least once a month?

A. Well, I do not recall the conversation, if that is what you mean.

Q. You remember saying, in substance, that to Mr. Ruddle at some point, is that correct?

A. Well, I have no specific recollection. It is a remark that I might have said quite easily.

Q. You would say it is quite likely that you may have made some such statement?

A. Well, the fact is we have a great many salesmen scattered all over the United States.

Q. Do you remember discussing with Mr. Ruddle or Mr. Peck, or both of them, the subject of core wash being sold by Shell Oil Company, a core wash developed by Mr. Ruddle?

A. Well, I do not recall Peck's being present.

(Testimony of John F. McSwain.)

Q. It was with Mr. Ruddle, was it?

A. I recall a discussion with Ruddle relative to a core wash.

Q. Just briefly, tell us what you recall.

A. Ruddle came into my office while we were negotiating for a contract, all out of breath; he had just come from Vulcan's Foundry. He stated that Harry Leas had washed a core with a composition containing his secret solution, and that it made a splendid core wash. Subsequent to that I discussed the matter with Mr. Gratama, and suggested that if there were other uses in a foundry for this so-called core oil, that if we were going to have any sort of control in the foundry, it should be included in the contract, and that accounts for the insertion of the clause in that respect.

Q. Do you remember Mr. Peek and Mr. Ruddle wanted to keep the core wash out of the present contract? A. What was that? [582]

Mr. Hackley: Will you read the question, Mr. Reporter?

(Question read.)

Mr. Hackley: Q. So they would be free to deal on it with somebody else?

A. There might have been some discussion to that effect.

Mr. Hackley: Q. Mr. McSwain, I will show you your examination in a deposition here, and ask you if this was your testimony at the time you gave your

(Testimony of John F. McSwain.)

deposition in this proceeding on December 3, 1940?
I read from page 42:

“Q. Do you remember that Mr. Peck and Mr. Ruddie wanted to keep that core wash development out of this present contract, so they would be free to deal with somebody else on that? A. I believe that they did.

“Q. Do you remember that your company insisted on that being included in the deal when the contract was made?

“A. I think that we did that.”

That was your testimony, was it?

A. If this is a true record of the thing, I would say it was.

Mr. Aurich: I will stipulate to that.

Mr. Hackley: Q. Do you remember on occasion telling Mr. [583] Ruddie, during the period when attempt was being made by your company to put Core-Min-Oil in a single package, that if the company could not get the product into one package, sell it in that form, they would work out a method of selling it in two packages?

A. I do not recall ever having made such a statement and question my having made it.

Q. Would you say it is quite possible that you made such a statement? A. No, I would not.

Q. Is this the testimony that you gave in your deposition on that point? I will read it to you and you can examine it:

(Testimony of John F. McSwain.)

“Q. On many, many occasions, isn't it true that you told Mr. Ruddle”——

Mr. Aurich: What page?

Mr. Hackley: Pardon me; page 67, Mr. Aurich.

Q. (continuing reading) ——“that if you couldn't get this thing lined up in one package successfully, your company would market it just as it had been turned over to them in the first place, that is, Ruddle Solution in one carton and asphalt emulsion in the other?

“A. Are you referring to the time when we determined that the Ruddle Solution had no value, or after?

“Q. Well, let's take that time before, if there was such a time.

“A. There was such a time. I don't recall any specific conversation, and I repeat that I must go back to a conclusion.

“Q. Well, it is your opinion now you probably did say some such thing?

“A. It is quite possible.”

A. Your question is not the same.

Q. This was your testimony?

Mr. Aurich: I will stipulate that the witness gave those [584] answers to those questions.

The Witness: If the Court please, he has asked about a different period of time. He asked about the time when he tried to put it in a different package.

(Testimony of John F. McSwain.)

Mr. Aurich: I will point that out later, Mr. McSwain.

Mr. Hackley: Q. Do you remember any discussions with Mr. Ruddle on the subject of selling Core-Min-Oil in two packages, or by a licensed method, whereby the foundry would be licensed to make cores with Core-Min-Oil, whereby they would buy solution from you, and asphalt, as they chose, and pay a license fee for operating under Ruddle patents?

A. I don't remember any specific conversation, but it is quite possible many such conversations were held.

Mr. Hackley: That is all.

Mr. Aurich: That is all, Mr. McSwain.

ROBERT B. HARBOTTLE,

Called for Defendants; Sworn.

The Clerk: Q. Please state your full name.

A. Robert B. Harbottle.

Direct Examination

Mr. Aurich: Q. Will you give us your age, and your residence, and your occupation, please?

A. My age is 30, my residence 1568 Euclid, in Berkeley, and I work as an accountant for Shell Oil Company, Incorporated.

Q. How long have you been employed by the Shell Oil Company as an accountant?

A. For eight years.

(Testimony of Robert B. Harbottle.)

Q. At my request have you made up a statement listing the amount of money that the Shell Oil Company and the Shell Development Company have expended in connection with their attempt to develop [585] a core oil?

A. Yes, I have.

Q. Is that the document that I now hand you?

A. That is it.

Q. You have a copy of it in your pocket?

A. Yes, I have one in my pocket.

Q. Will you just refer to that, please? What period of time is covered by the tabulation and figures that appear on this sheet?

A. From late 1937 to the middle of 1939.

Q. Does this document profess to disclose the actual amount of money that Shell Oil Company and Shell Development Company expended in connection with their work on core oils, or is it an approximation based upon the fact and date set forth in the sheet?

A. It is an approximation of the direct cost, omitting all overhead.

Q. In other words, if I understand you correctly, the total amount of that would be larger than the amount that appears on this sheet?

A. Yes.

Q. Just describe briefly how you did this and how this was prepared.

The Court: You may give us the total. That will be sufficient.

Mr. Aurich: Q. All right, just read the total in the record.

A. \$16,250.

Mr. Aurich: That is all.

(Testimony of Robert B. Harbottle.)

Mr. Hackley: Your Honor, I assume this document is going to be offered.

Are you going to offer it, Mr. Aurich?

Mr. Aurich: No—I will offer it if you want.

Mr. Hackley: I want to object to any testimony regarding this document or the giving of this total here on the ground that it is not the best evidence, and on that ground I move to strike the [586] testimony.

The Court: Let the document and let the testimony go in evidence.

Mr. Aurich: That is all.

(The statement referred to was marked Defendants' Exhibit BBB in evidence.)

Mr. Aurich: Any cross examination?

Mr. Hackley: No cross examination. I have nothing here I can go on.

Mr. Aurich: That concludes the defendants' case, with the exception of two offers I would like to make at this time.

I would like to offer in evidence the deposition of Lydell Peck under the provisions of Rule 26 (d) (2) of the Rules of Civil Procedure, and I will ask that it be deemed read in evidence, unless the Court or opposing counsel insists that I read it.

Mr. Hackley: I have no objection.

(The deposition referred to was marked Defendants' Exhibit CCC in evidence.)

(Defendants' Exhibit CCC, the deposition of

Lydell Peck, is set out at page 1495 of this printed record.)

Mr. Aurich: I also offer in evidence, under the same procedure that Mr. Waller's deposition was offered here, but under the provision of Rule 26 (d), subparagraph (2), the deposition of Mr. Allan B. Ruddle, and ask that it be deemed read in evidence, unless there is some objection to that method of offering it.

Mr. Hackley: It strikes me as needless and cumulative, your Honor. I have no objection otherwise.

Mr. Aurich: There are many matters in there that were not brought out in the trial, which are quite essential to the defendants' case, and I do not want to take the time to recall Mr. Ruddle and repeat what we have already in the record.

(The deposition referred to was marked defendants' Exhibit DDD [587] in evidence.)

(Defendants' Exhibit DDD, the deposition of Allan B. Ruddle, is set out at page 1159 of this printed record.)

Mr. Aurich: In connection with Mr. Ruddle's deposition, I offer in evidence as Defendants' Exhibit R, the document which was identified in the deposition as Defendants' Exhibit R, being a letter from Mr. Ruddle and Mr. Peck to the Shell Oil Company, and fully identified therein.

Mr. Hackley: I have no objection.

(The letter heretofore marked Defendants'

Exhibit R in the deposition of Mr. Ruddle was received in evidence.)

Mr. Aurich: I also offer in evidence the document which has been heretofore referred to as Defendants' Exhibit T, both in the deposition and at the trial, and ask that it be marked as Defendants' Exhibit T here. The document has been identified in the deposition.

(The document heretofore marked Defendants' Exhibit T in the deposition of Mr. Ruddle was received in evidence.)

Mr. Aurich: The defendants rest.

(Defendants rest.)

Mr. Hackley: Mr. Aurich, I spoke to you a few moments ago about a copy of a letter.

Mr. Aurich: I will stipulate to that.

Mr. Hackley: You will stipulate that it may go in?

Mr. Aurich: No; I will stipulate to its authenticity.

Mr. Hackley: That is what I mean.

I have arranged with counsel to offer Plaintiffs' Exhibit 28 for identification without further identification as an exhibit, although I understand Mr. Aurich reserves certain objections. The letter was written by Mr. Peck and, if you recall, he so testified.

You would agree to that much?

Mr. Aurich: I have no objection to the authentication. [588]

Mr. Hackley: I will offer as Plaintiffs' Exhibit

28 the document previously identified as Plaintiffs' Exhibit 28 for identification.

Mr. Aurich: I object to it on the ground it is hearsay. It is a letter written by Mr. Peck to the American Brake Shoe & Foundry Company, I believe, dated February 24, 1938, long prior to the date of the contract or any suit.

The Court: I will allow it in subject to a motion to strike.

(The letter heretofore marked Plaintiffs' Exhibit No. 28 for identification was received in evidence.)

Mr. Hackley: I will say in that connection it is only offered to fix a date of Mr. Ruddle's in his testimony.

Mr. Aurich: If that is all——

Mr. Hackley: That is all on this point.

Mr. Aurich: I have no objection.

Mr. Hackley: Your Honor, on this question of rebuttal, we are not going to offer any testimony by witnesses as such by way of rebuttal. This case, like so many others where an expert is called on the one side and experts are available on the other, is one where there comes a conflict of fact, which should be, and is readily determined, in fact. Your Honor has heard the witnesses for the Shell Company come in here and consistently say that Core-Min-Oil is useless to make a good core, and they have, in some cases, modified that a little bit by saying you can make a good core out of it if you make it in an electric oven, or if you make it in a direct-fired oven

where the gases of combustion are not exposed to the core.

We produced two witnesses on the case in chief of the plaintiff who testified that, from their own practical work in the foundry, they made superior cores from the product; made them [589] readily, without any difficulty; and I would like to propose, your Honor, that we be given an opportunity to demonstrate to your Honor, if your Honor would wish so to do, at the Macauley plant at any time convenient to the Court, the making of a core with Core-Min-Oil in the presence of our opponents; the baking of that core, the pouring of the casting with it, and show to your Honor, who is certainly not unfamiliar with the coremaking art, precisely why our testimony on that subject is the testimony that must control.

The Court: The first thing that occurs to me is how are you going to dry the cores?

Mr. Hackley: The cores will be dried in either of three ways: in an electric oven, under a hood, or in the oven with the gases removed and after the fires are turned out.

The Court: You will have to eliminate two of those at the very outset: one, with your electric drier, and the other, with the cover, either of which is not essential to this case.

Mr. Hackley: I just would be prepared to demonstrate here—now, if your Honor would not care to observe the demonstrations, on the theory that ex parte tests here offered by the defendants are entitled to little, if any, weight—I would like to pro-

pose that inter-party tests be made, and that the record be established once and for all precisely what the facts are on this case. I would like to repeat the offer to demonstrate it to the Court. If the Court would prefer not to do that, then I would rest the case of the plaintiffs at this point.

The Court: Do both sides submit your cases?

Mr. Aurich: I have nothing further to offer.

The Court: All right.

What is the next step?

Mr. Aurich: The next step, I assume, would be the question of [590] submission, and on that point, it is our wish to comply with whatever suggestion the Court has, in every way.

The Court: What is your thought?

Mr. Hackley: My thought is, your Honor, there is such a tremendous amount of evidence here, it would be more easily brought together and assembled for the study of the Court in a brief, rather than an oral argument, although I am prepared to work in either direction. I have not, purposely, during this trial, attempted to read to your Honor the notes, records and documents that were put in here, because that is a highly time-consuming thing. There are all those documents, admissions on the part of Shell, which in my opinion support every allegation we have made in this case. As a matter of fact, we are prepared to try this case on the records that the Shell Company prepared on this product, and which became records prior to the time they decided they wanted to get rid of this product.

The Court: How much time would you like to brief this case?

Mr. Hackley: I would like to ask your Honor for 30 days. I have an appearance at the Patent Office, and another one also; otherwise I would try to do it in a shorter time.

The Court: How long will it take you?

Mr. Aurich: I hesitate to ask for 30 days. I would like to ask for 20 days, with the privilege, at least, of asking for 10 more later on. I do not know. The size of my brief, of course, will depend upon what the Court will do.

The Court: The Court is prepared to tell you what to do.

Mr. Aurich: I am prepared to submit the matter without any brief, now.

The Court: Twenty, ten and five.

Now, let me warn you that there will be no extension of time [591] here. Do not waste your time coming out here with stipulations. That is final.

Mr. Aurich: We will have our brief in within that time.

The Court: I intend it for both sides.

Mr. Hackley: I understand, your Honor.

(Submitted—20, 10 and 5.) [592]

PLAINTIFFS' EXHIBIT No. 37

DEPOSITION OF ARTHUR C. WALLER

In the Southern Division of the United States District Court, in and for the Northern District of California.

LYDELL PECK and ALLAN B. RUDDLE,
Plaintiffs,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Defendants.

Be It Remembered: That on Tuesday, November 25, 1941, at the hour of 10:00 o'clock A.M., pursuant to oral stipulation of counsel, at the offices of Messrs. Hackley & Hursh, 804 Crocker Building, in the City and County of San Francisco, State of California, personally appeared before me, Eugene P. Jones, a Notary Public in and for the City and County of San Francisco, State of California, authorized to administer oaths and to take acknowledgments, etcetera, Arthur C. Waller, a witness called on behalf of the Plaintiffs.

Roy C. Hackley, Jr., Esq., representing Messrs. Hackley & Hursh, appeared as attorney for Plaintiffs; and Alfred C. Aurich, Esq., representing Charles M. Fryer, Esq., appeared as attorney on behalf of Defendants; and the said witness, having been by me first duly sworn to testify the truth,

Plaintiff's Exhibit No. 37—(Continued)

the whole truth, and nothing but the truth in the cause aforesaid, did thereupon depose and say as is hereinafter set forth. [593]

(It is further stipulated that the deposition may be taken pursuant to the Federal Rules of Civil Procedure.)

ARTHUR C. WALLER,

Called as a witness on behalf of Plaintiffs, being first duly sworn, testified as follows:

Direct Examination

By Mr. Hackley:

Q. State your full name, age, and residence address, please?

A. Arthur Channing Waller. My business address or home address?

Q. Your home and business address, please.

A. 8258 Fifteenth Avenue, Northeast, Seattle, Washington. Business address, care of Shell Oil Company, Incorporated, 1219 Westlake Avenue, North, Seattle, Washington; age 53; occupation, civil engineer.

Q. With whom are you connected in business?

A. Shell Oil Company, Incorporated.

Q. At the Seattle office?

A. That is my headquarters. I operate in other parts of the country other than just Seattle.

Q. What is your particular work with the Shell Oil Company?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Collaboration with engineers in connection with construction of roads, streets, airports—any place where pavement areas are placed.

Q. And do you primarily deal in asphalt products of the company?

A. I am in the Asphalt Road Oil Division.

Q. How long have you been with the Shell Oil Company?

A. Since the 1st of October, 1936. [594]

Q. Where were you first located when you were with them?

A. San Francisco.

Q. In the Asphalt Road Oil Division, then?

A. Yes, Asphalt Department, more correctly.

Q. And under whom did you particularly work when you first went to work for the Shell Oil Company?

A. J. F. McSwain, Manager, Asphalt Department.

Q. You worked out of the main office in San Francisco, did you?

A. That is right.

Q. At the Shell Building?

A. That is correct.

Q. Were you superior or subordinate at that time to Ray Harsch?

A. Subordinate. He is the Assistant Manager.

Q. Of the same department?

A. Asphalt Department.

Q. If I understand the ranking of that department, Mr. McSwain is the Manager of the department?

A. That is correct.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Mr. Harsch is his first assistant, is that correct? A. Assistant Manager.

Q. And then you came next, did you?

A. I wouldn't say. I never had my status exactly defined in that way. I worked under them.

Q. And reported directly to them?

A. That is right.

Q. Whom did you report to particularly, Mr. McSwain or Mr. Harsch? A. Mr. McSwain.

Q. How long did you remain at the San Francisco office of the Company in the Asphalt and Road Oil Department?

A. Two years, very close to the day.

Q. At the end of the two years did you leave for your present office at Seattle? A. Yes.

Q. What date exactly did you go to Seattle, do you remember?

A. I couldn't say exactly; about the end of October, 1938. [595]

Q. You would place it in the month of October, 1938 definitely, however, would you? A. Yes.

Q. Do you recall doing any work while you were with the Shell Oil Company at San Francisco with a product known as Core-Min-Oil?

A. Yes, I do.

Q. Do you recall working in that connection with Mr. Allen B. Ruddle or Mr. Lydell Peck?

A. I do.

Q. Both of them? A. Both of them.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. In your own way will you tell us just the complete history of your familiarity with the subject of Core-Min-Oil, when you first heard of it, under what conditions, and carry the story along? I would like to have it in your own words, if you will.

A. How brief or how elaborate do you desire?

Q. Very elaborate; just as thoroughly as you can remember it, with every detail that you can recall.

A. About the first month of 1938—January, 1938—Mr. McSwain mentioned to me that he had heard of a product owned by other parties which, combined with emulsified asphalt, could be used in making cores for foundry practice.

Q. Did he name these other parties?

A. Yes.

Q. Whom did he say those other parties were?

A. Mr. Allan B. Ruddie.

Q. Anyone else?

A. Not that initial time.

Q. Was anyone else present at this initial discussion with Mr. McSwain other than yourself and Mr. McSwain?

A. I don't recall; there might have been.

Q. You don't remember anyone, however?

A. No.

Q. Continue, please.

A. From time to time some mention was made of this medium, and in January—

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. By "medium" do you mean Core-Min-Oil?

A. Well, I did not [596] know it by that name at the time. It was a medium that was used in connection with foundry practice. A little later, in the month of January, I met Mr. Ruddle, was introduced to him by Mr. McSwain, and I think it was at the initial meeting that Mr. McSwain, and Mr. Ruddle, and Mr. Harsch, and myself went to Emeryville, to the Macauley Foundry, where there was explained to us by Mr. Ruddle the elementary procedure and foundry practice as far as cores were concerned, which was entirely new to all of us, as far as I know—to myself, certainly.

Q. Did Mr. McSwain indicate it was new to him, too? A. Yes, I believe so.

Q. And it appeared to be new to Mr. Harsch, did it?

A. It did. As say, to all of us—to myself, certainly.

Q. Continue, please.

A. At that visit Mr. Ruddle entered a side door, as I recall it, of the foundry. We did not go through the main office. He went directly to the rear of the building, where the coremaker's bench was located.

Q. This was the Macauley Foundry?

A. This was at the Macauley Foundry.

Q. Do you remember its address, Mr. Waller?

A. No, I don't.

Q. It is in Berkeley?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. In Emeryville, I believe.

Q. Continue.

A. The coremaker explained rather generally the function of cores, as far as castings were concerned, how they were made, and touched upon generalities and explained to us how they had to be baked after they were formed on the bench.

Q. At this time do you remember the name of that coremaker?

A. No, I don't.

Q. Would you know it if you heard it?

A. I doubt it.

Q. Was it Otto Gosch?

A. It was a peculiar name. I have great difficulty in hearing proper names for the reason that nothing [597] precedes or follows.

Q. I show you the name of Gosh, or some semblance of it, written here, "O-t-t-o G-o-s-c-h." Does that name sound like the name of the man you remember?

A. No, I couldn't say that I have any recollection at all of that name. There is a good deal of noise in the foundry and hearing in there in connection with the work is quite difficult for me, and a proper name is hard for me to get.

Q. You remember the continuity of a whole story but do not necessarily get isolated words, like proper names, is that it?

A. That is correct.

Q. Continue, please.

A. This man, however, was of large stature, rather heavy-set, as I recall it. All the procedure

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

being absolutely new and foreign to me, I probably only absorbed a slight continuity as to what it was all about, but this coremaker explained to us what cores had to do, what their function was, and mentioned that at that time Mr. Ruddle had a medium for use in making cores, although I couldn't say that he showed us any that he specifically stated were made with that medium. I think our visit lasted not to exceed thirty or forty-five minutes at the most. We walked around a little bit, stepping over this, that and the other, and generally following Mr. Ruddle around while he was explaining the different methods of procedure in the foundry.

Q. Foundry practice?

A. Correct. That is correct,—the pouring, the making of the molds, and the sand and the clay and the various ingredients that were necessary for the practice.

Q. You and the rest of these gentlemen, I take it, were getting the general foundation in core-making, is that correct?

A. I would say that was generally the purpose that was accom- [598] plished.

Q. That was, so far as you can recall, the purpose of the visit, was it?

A. Yes, substantially that is it.

Q. Did Mr. Ruddle show you any cores at that time made or supposed to have been made with Core-Min-Oil?

A. He showed us quite a few cores, and among

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

them there might have been one or two, or half a dozen that were specifically stated to have been made with that medium, but it does not stand out in my recollection as having been pointed out definitely to me.

Q. Mr. Gosch was present, or whoever this core-maker was, this foundryman, was present during all of this conversation, was he?

A. Yes, but he did not take part in it for the reason he was occupied with his daily work at his bench and he was turning out apparently, either on piecework or by the hour, a certain portion of work, and we would move away from him and then come back towards him. So consequently he could not be said to have an active part in all our conversation.

Q. Had you at this time become familiar with the word "Core-Min-Oil" as describing the Ruddle product?

A. I believe that came afterwards.

Q. You are not absolutely certain on that point?

A. No, I am not.

Q. You appeared a little indecisive, and I was not able to tell. I would assume that it was about this time that you learned of Core-Min-Oil as a name for the product?

A. Yes, it might have been mentioned to me verbally and not registered with me for the same reason that a proper name is difficult for me to

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

get; there is no connection prior to it or after it; it is all by itself.

Q. Until you see it written, it doesn't really register; is that about it?

A. That stamps it more definitely in my mind. The same with a name written, I will get a better idea of it. [599]

Q. I take it, Mr. Waller, that you are somewhat hard of hearing?

A. You are correct.

Q. I don't mean to impose on you, personally, in that connection, but I think under the circumstances it would be well if the record showed that fact.

A. That is perfectly satisfactory.

Q. You understand why I ask the question?

A. I understand.

Q. Did this foundryman or coremaker at Macauley's, whose name you can't now recall, discuss the merits of the Ruddie product as a core oil or for the making of cores or castings at the time of this first visit?

A. He might have at that time, but not knowing anything about any core oil, the significance of it was lost upon me if he did.

Q. You did not know what was a good core or a bad core, or a good core oil or a bad core oil, then, is that right?

A. No, I had no idea of it.

Q. Do you have any recollection now whether

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

the individual that you talked to seemed to be pleased with the Ruddle product or whether he indicated any reaction toward the product generally?

A. No. If I don't recall that he even made mention of it, I couldn't recall naturally whether he had any enthusiasm about it.

Q. That is it. I don't know what may have been the situation; I am only trying to develop the facts there. You say this visit lasted thirty or forty minutes? A. Yes.

Q. And what took place after that?

A. I believe we got into the car and came back to San Francisco.

Q. All of you? A. All of us.

Q. Did you continue any discussions about the Core-Min-Oil product after you came back to San Francisco?

A. I believe we [600] had all seen so much that was absolutely new to us that we were discussing in general a variety of the scenes we had observed.

Q. You were still learning coremaking practice, literally, were you—getting a foundation, so to speak? A. That is correct.

Q. Now, what is your next recollection of the connection of yourself with the subject of Core-Min-Oil? Just continue your story.

A. Probably after a lapse of several days—I couldn't say how long a time intervened—it was brought up in discussion again at the office.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Who was present?

A. Mr. McSwain and myself, and possibly Mr. Harsch, also; I don't recall. Reference was made to the things we had seen at the foundry, and as I recall it I met Mr. Ruddle again, though just exactly where I don't recall.

Q. What was the substance of this discussion between Mr. Harsch, Mr. McSwain, and yourself?

A. The general idea was that as emulsified asphalt was one of the component parts of Mr. Ruddle's Core-Min-Oil, it provided a possible outlet for emulsified asphalt, which the Shell Oil Company manufactures.

Q. And your company was naturally looking for large scale commercial outlets for its product; is that correct?

A. We were looking always for an outlet for our manufactured product.

Q. What else do you remember now about that general discussion?

A. There was nothing specific that stood out in any of these discussions; they were so numerous; they might last a few minutes; they might occur at a lunch hour, and there is nothing that makes any one of them stand out definitely in my recollection.

Q. What I am really more interested in than either the time or the place, specifically, in the discussion is to get the general [601] picture of

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

the development of interest by the Shell Oil Company in the subject of Core-Min-Oil, and what your connection with that was, so you can bear that in mind as you go along. Now, continue, if you will, in the general narrative.

A. I am unable to say definitely just when the next meetings occurred, but from time to time, several different times, I went over to the Macauley Foundry in company, always, with Mr. Ruddle; sometimes there were others, sometimes not. Mr. McSwain would ask me if I would accompany Mr. Ruddle. And through talking with him on the way over, on the way back, and at the foundry, picture gradually unfolded before me of what the purpose of the whole thing was, and how this solution, then known as Core-Min-Oil to me, had its place in the foundry picture. I couldn't say how many times we went over, but each time I would get something more in the way of a completed picture of the procedure.

Q. These visits successively to the Macauley Foundry, that you speak of, occurred when? In February, 1938, something like that?

A. Well, they occurred over January and part of February. They became less frequent at the Macauley Foundry for reasons that I don't recall now. The quarters were somewhat cramped, there. The lighting never impressed me as being a desirable place for any research; it was kind of dark. I think principally we went there because Mr. Ruddle

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

kept the ingredients of his solution there, which he would draw off when we made a visit and take either with him or use in any other way that he had need of.

Q. What was done at these specific visits? Were cores prepared from Core-Min-Oil prepared at that time?

A. I never recall seeing any cores made at the Macauley Foundry where I know that [602] Core-Min-Oil was incorporated in them.

Q. You don't recall any? A. No.

Q. You recall that Core-Min-Oil was there and that it was used, but you don't remember seeing the cores; is that correct?

A. I wouldn't have known whether it was being used or not; I had no way of finding out.

Q. Well, was it represented to you by Mr. Ruddle that Core-Min-Oil was being used?

A. No, I don't think it was. I think we were still talking over the intricacies of coremaking and reinforcing with wires—what a core had to be to be a core.

Q. You were roughly in the educational phase?

A. Still very definitely in the educational stage.

Q. When did you change over, if you did change over, from an educational phase, to a study of the making of cores with Core-Min-Oil?

A. I was not so interested in the making of cores with Core-Min-Oil as I was in the possibilities of an emulsified asphalt outlet.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Of course, Core-Min-Oil presented that possibility, didn't it? A. It seemed to, definitely.

Q. A large proportion of Core-Min-Oil, as you later came to learn, is emulsified asphalt?

A. Well, I wouldn't say that it was a large proportion, but there is a proportion of it.

Q. What proportion would you say, as you remember it?

A. I wouldn't care to quote from memory as to what the proportions were.

Q. No, but can you give me an approximation? I am not trying to hold you down to some exact figures unless you happen to recall; but was the asphalt emulsion content by volume more or less than one-half of the total of Core-Min-Oil, as you remember it? A. I would say less. [603]

Q. Than one-half? A. Yes.

Q. Was it more or less than one-fourth of the total volume?

A. If you would like to know, you can find it in my handwriting in those notes.

Q. You have notes which indicate precisely the formula of Core-Min-Oil as you came to understand it?

A. That was the formula that we used later in making cores with Core-Min-Oil as noted by me; but I don't recall at the present time the amount.

Q. You have indicated some notes (handing papers to witness). Will you state what these notes are that you have produced, just broadly?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. These notes were made after a considerable period of time from the particular date that we are discussing at the present time. These were made in June, and we were talking about January and——

Q. In continuity we are nowhere near that date yet, are we? A. That is correct.

Q. But you happened to refer to the notes, and I thought we would identify them. We will come to them later in your story.

A. I identify these as my notes. There is the proportion of emulsified asphalt (indicating).

Q. You have indicated a formula on these notes on the reverse side of the first sheet.

A. That is correct.

Q. Will you read that formula into the record, please?

A. Note dated June 10, 1938. "All mixes made as follows: Sand, dry, 93%; Solution 4½%; Emulsified asphalt 2½%."

Q. The word "e-m-u-l" refers to emulsified asphalt, does it?

A. That is my abbreviation for emulsified asphalt.

Q. And solution refers to what in the formula?

A. The solution refers to Mr. Ruddie's solution in combination, the proportion [604] of sodium silicate that he made up.

Q. Sodium silicate is included, then, in the item marked "Solution"? A. That is correct.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. The word "Solution" or the product which you have marked "Solution", plus the product marked "Emulsion" or "Asphalt emulsion," in combination form what you knew as Core-Min-Oil; is that correct? A. Yes, that is correct.

Q. Asphalt emulsion represents approximately one-third of the total volume of Core-Min-Oil, if I judge this formula correctly; is that it?

A. No.

Q. Correct me if I am wrong.

A. That is right. Not quite one-third. "Approximately," you said. That is right.

Q. I said "approximately one-third."

A. Of the solution, itself.

Q. That is right, of the combination.

A. That is right.

Q. So that we have the record clearly, I may have confused you there a little bit: Core-Min-Oil comprises, we will say, 4.5 parts solution and 2.5 parts asphalt emulsion; is that correct?

A. That is right.

Q. Making a total of 7 parts?

A. That is correct.

Q. Of which 2.5 parts are asphalt emulsion?

A. That is correct.

Q. That 2.5 parts is approximately one-third of the total of 7 parts of Core-Min-Oil; is that correct?

A. Approximately.

Q. So, as you understood it, the asphalt emul-

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

sion provided about one-third of the total volume of Core-Min-Oil? A. Roughly, yes.

Mr. Hackley: I will offer the notes identified by the witness as "Waller Deposition Exhibit 1," and ask that they be so marked.

(The 7 pages of notes were marked "Waller Deposition Exhibit 1.") [605]

Q. Now, let us go back to where we were in January of 1938 and continue with the general continuity of your narrative, please.

A. It appeared sometime in February, 1938, to the best of my recollection, that it would be better to transfer our further experiment and observation to the Vulcan Foundry in Oakland.

Q. This was a decision made by Mr. McSwain and yourself, was it?

A. No, I could not say that it was. It was simply told me that that was where we were going to work, and I never bothered to find out who made the decision.

Q. Who told you that?

A. I do know that Mr. Lydell Peck was a friend of Mr. Harold Martin, the Manager of the Vulcan Foundry, and I was introduced, as I recall it, to Mr. Martin by Mr. Peck.

Q. Mr. Waller, who was it that told you the work was to be transferred to the Vulcan? You said, "It was told to me." Now, I would like to identify that if we can.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. I couldn't specifically state.

Q. Somebody in the Shell Company?

A. It might have been in a group conversation with Mr. Ruddell and Mr. Peck and Mr. McSwain and myself. There were frequent meetings where we would—not formal discussions, quite the reverse, and things might have been mentioned there that such and such would be a good idea.

Q. As I understand from the way you have described this, after the first getting-acquainted meetings, this was a very close knit arrangement between yourselves, on the one side, and Mr. Peck and Mr. Ruddell, on the other; you worked closely together; you had many conferences, and they were highly informal and there was a wide exchange of information and ideas. I am trying to get a general picture on the record of the relationship [606] there.

A. I wouldn't say that it was close-knit, exactly, as much as it was informal.

Q. There was a very ready and free exchange of information, was there not?

A. We were seeking ways and means to determine the possibilities that we each individually were interested in,—ourselves in the outlet of emulsified asphalt, and Mr. Peck and Mr. Ruddell, in the successful placement of their medium in foundry practice.

Q. Incidentally, what did you understand to be the object of Mr. Peck and Mr. Ruddell in coming

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

to the Shell Company with this product, Core-Min-Oil?

A. I presume that they felt that as long as emulsified asphalt was a necessary component part of the design, that it would be of advantage to seek a connection with a manufacturer of that product. That appears to be perfectly logical to me.

Q. And your company, being a large-scale manufacturer of asphalt emulsions, interested in the sale of those products——

A. That is correct.

Q. (Continuing) ——in as much volume as possible, seemed a perfect and natural set-up there; is that correct?

A. That is right.

Q. And, of course, you were aware of the fact, or your studies developed the fact, I assume, that the market for core oil in the United States is a tremendous one?

A. That is correct; that fact——

Q. And a superior core oil then would be a very desirable product, generally?

A. If it possessed something that the others did not have, which made it desirable, it most certainly would be.

Q. That is correct. And if that product utilized an asphalt emulsion, it would be highly desirable to your company to market [607] it?

A. That is correct.

Q. Or, for that matter, any other product that your company was manufacturing?

A. Yes, any petroleum products. We are interested in marketing all of them.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. It wouldn't matter to you whether it happened to be asphalt emulsion or some other petroleum product, as long as it was a product of your company, and a large market was present?

A. That is right. My interest was chiefly because it was asphalt and I was employed by the Asphalt Department.

Q. In fact, you weren't even concerned necessarily with the fact that it was an emulsion; the asphalt product provided a desirable outlet from your angle; is that correct?

A. That is right.

Q. Continue, then, with the general story. You said that it was decided,—apparently it was a consensus of the opinion of all of you,—to move over to the Vulcan Foundry and do this work?

A. That is right. At the Vulcan Foundry more spacious conditions existed, and we were able to carry observations and studies as to foundry procedure in a more satisfactory manner. A core-maker was generally assigned to the purposes of Mr. Ruddle in the making of cores, which is a highly specialized manual operation, and the foreman, named Leas——

Q. Is that Harry Leas?

A. Harry Leas, was very helpful in every way, as was Mr. Martin.

Q. That is the same Mr. Harold Martin you referred to? A. That is correct.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. What is his capacity with the Vulcan Foundry, do you know? Is he general manager?

A. I would assume that he is general manager, as he was apparently No. 1 man in the office. All things were referred to as coming to or from Mr. Martin. [608]

Q. By the way, what was the approximate date when the transfer was made over to Vulcan?

A. I would hazard a guess of the early part of February.

Q. 1938? A. '38.

Q. Continue, please.

A. It appeared that Mr. Ruddle, in making cores in the past at Macauley's, or wherever else he had made them before our entry into the picture, had experienced difficulty in that some of the cores were satisfactory and some were definitely not. And this unsatisfactory condition was explained to us as consisting of a friable or soft condition after they were removed from the baking oven.

Q. Explained to you by whom? By Mr. Ruddle?

A. By Mr. Ruddle.

Q. If I understand you, the results under apparently identical conditions were inconsistent?

A. That is correct.

Q. And the inconsistency rested in the fact that some cores were sound and solid, hard, while others had soft spots, or, as you put it, were friable?

A. I don't want to get a misconception of "soft spots." What I meant by "soft" was they could

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

be easily—the crust could be easily broken through by pressure; they couldn't stand handling.

Q. You are indicating punching with the finger, for example.

A. Or a pencil point, or anything of that sort, whereas the part that was sound would withstand considerable pressure. But the softness does not indicate pliability; that is what I meant.

Q. Yes, I think I understand you.

A. It would be crusted.

Q. If I understand you, many of the cores came out with a hard over-all surface which resisted considerable attempts to penetrate it or puncture it?

A. That is right.

Q. Then there were other cores, apparently made under like conditions, from the same product or products, which were soft [609] and puncturable; is that what you mean?

A. That is right.

Q. Mr. Ruddle described that problem to you; is that correct?

A. At the very inception of our association with him.

Q. While you were still over at the Macauley Foundry? A. That is right.

Q. In January, 1938? A. That is right.

Q. Continue.

A. He explained this as an unpredictable factor.

Q. Something that happened and he couldn't explain why; is that correct?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. That is right.

Q. He was perfectly frank with you about it, however?

A. Oh, yes; and it appeared to us that that was the main difficulty that stood in the way of the successful adoption of Core-Min-Oil as a standard foundry medium, as far as we were able to tell.

Q. The cores, in other words, which were sound and had this firm crust, unpenetrable crust on them, appeared to you to be—by “you” I mean you and the others of the company working with you—to be satisfactory cores; is that correct?

A. We were in no position to judge at any time. We always took cores to the experienced men to get an opinion as to whether they were passable, or not.

Q. And their opinion was what, now?

A. Well, I never took any of those early cores that Mr. Ruddie told us about to verify what he said to anybody, to secure an opinion. His word was sufficient to us, that there was a difficulty there that existed, which he had frankly stated, that as they came out from the oven, from visual inspection, they were largely O.K., but when they were touched, or pressure was placed upon them in slight degree some would collapse. That appeared to us to be the difficulty which had to be overcome in order to arrive at a correct basis to go ahead with the promotion of the Core-Min-Oil. [610]

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. You mean by "promotion" the sale of the product? A. That is right.

Q. Continue, please.

A. We were interested in the sale of emulsified asphalt more than anything else.

Q. If that sale could be stimulated by tying it to the Ruddell set-up as a Core-Min-Oil, or whatever you wanted to call it——

A. An additional outlet was supplied.

Q. (Continuing) ——that satisfied your problem?

A. That was our idea. The work that ensued at the Vulcan Foundry for the next period of several weeks was to determine, if possible, what caused this inconsistency of the cores in the baking. And to that end Mr. Ruddell and myself made repeated trips back and forth from the Vulcan Foundry. And though I may have neglected to say so, I was assigned by Mr. McSwain at a date I don't recall at the present time, to give my entire time to this particular job.

Q. Do you remember when you were assigned to the task?

A. Oh, I would guess about the middle of February.

Q. 1938?

A. 1938. All of the dates that I have reference to in connection with my work on Core-Min-Oil are encompassed in 1938.

Q. We can accept that, then, as a general state-

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

ment for all of your testimony, unless you indicate differently? A. That is correct.

Q. Thank you. Continue.

A. We had a coremaker named Manuel,—I don't know his last name—more or less assigned to our requirements.

Q. Who is "we"?

A. When I say "our" I include Mr. Ruddle and myself, as we were there practically in each other's company, as far as I know; we were there together most of the time. I [611] know I very rarely went there without Mr. Ruddle at that particular time. In order to discover or to more fully explore the possibilities as to why these cores were failing, which definitely appeared to be in the baking process, cores were made by the coremaker Manuel **and left in the lower half of the mold, or the drag,** and transported over to Martinez where we have an asphalt laboratory at the Shell Company's refinery. And there we attempted to bake the cores as nearly as possible at the temperatures that had been given to us as prevailing in foundry procedure.

Q. You say given to you—given to you at the Vulcan Foundry by foundrymen?

A. Yes; also in any hand book or anything of that sort that we had recourse to regarding foundry practice.

Q. Do I understand that your company, in all this investigation, attempted at all times to follow best foundry practices as could be determined from

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

a study of the foundry practice in hand books and in the literature wherever you might have information that you considered to be authentic; is that correct?

A. Oh, yes, that was basically our idea. I don't remember the name of the organization, but we even at a later date secured data as to how to test cores for strength and built pressing apparatus at our laboratory in accordance with, I think it is, the American Foundrymen's Association standards.

Q. You obtained the standards from the Association?

A. The standards for test adopted by that Association.

Q. And you set up testing apparatus at the Martinez laboratory, do I understand?

A. That is right.

Q. You were about to describe taking some of the cores prepared over at the Vulcan Foundry up to the Martinez Laboratory? A. Yes. [612]

Q. And baking them there to attempt to find a solution to this problem of softening or inconsistencies in the cores? A. That is right.

Q. Continue with that, please.

A. Care had to be taken in driving back that undue jolting was not suffered that would break the cores, which were in an unbaked condition, and necessarily easily dispersed.

Q. They were just pieces of molded sand at that point, weren't they?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Well, they were still in the lower half or drag which they are always baked in.

Q. Which acts as a supporting measure, of course?

A. They cannot be baked any other way. They had to be taken over in the drag and then baked in that form. And it was noted that the first few batches of a few cores each of small dimension were satisfactory, that were made at Martinez.

Q. You baked them in a different type of oven over there than you did at Vulcan?

A. Yes, we baked them in an electric oven. That has the indirect heat, rather than direct or ordinary open-flame gas-fired oven such as existed at both Macauley's and Vulcan. The significance of the indirect fired oven was not immediately attributed as a cause, and later we constructed a gas-fired oven at Martinez out of sheet metal, in order to duplicate as nearly as possible the condition of ovens at Vulcan. And it was found then that we could get undesirable cores from time to time about in the same proportion as we did over at Vulcan.

Q. Who worked with you over at the Martinez laboratory—with Mr. Ruddie and yourself?

A. A man by the name of Earl Spotswood.

Q. Anyone else?

A. I think a man by the name of Warren. [613]

Q. You don't recall anyone else?

A. No, I do not. There were other helpers in

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

the laboratory, but those two men were the 1 and 2 men.

Q. Was Mr. Snyder over there, do you remember?

A. Mr. Snyder was there, but I think that he had a position at that time which took him out of the laboratory,—I recall going to his office in a building other than the laboratory,—so he collaborated with our procedure.

Q. That is Mr. L. J. Snyder, isn't it?

A. I couldn't tell you his initials.

Q. Then in the course of these comparative tests between direct and indirect fire ovens you and Mr. Ruddle observed that when the core was fired in an indirect fire oven this inconsistency in the surface impenetrability or toughness of the core did not occur, if I understand you.

A. I don't think Mr. Ruddle and myself observed it until it was called to our attention by Mr. Spotswood.

Q. If I get the picture, you and Mr. Ruddle were following this work, but Mr. Spotswood, if I understand you, is the one who first made the suggestion that that might be the solution to the problem?

A. That is right. But we did not remain at the laboratory over any protracted length of time. Therefore, we were not a party to the procedure that occurred there, where the difficulty arising from open or gas-fired direct heat was determined

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

to be the attributable cause of the friability of the cores.

Q. Mr. Spotswood was directed by you, representing the company, I take it, to carry out these tests at Martinez?

A. No, I had no position of direction there. Mr. Spotswood was probably directed by Mr. McSwain, or from Mr. McSwain through [614] whoever his immediate superior was at the refinery, to undertake the work. I gave no direction.

Q. Who instructed you to take the cores up to Martinez to Mr. Spotswood?

A. I don't think anybody did. I think that was of my own volition.

Q. You did not go to Mr. Spotswood without Mr. Spotswood being forewarned in some way that he was to cooperate with you, did you?

A. Oh, we knew that we would have the cooperation, because the asphalt laboratory at Martinez, although under the direction of the manager of the refinery, is definitely part of the Asphalt Department. The Asphalt Department brought it into being.

Q. You had full authority to carry out all this work?

A. It is all a portion of our Asphalt Department.

Q. That is the picture I wanted to get there. I wasn't sure just how you were set up.

A. Though they do other work other than on

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

asphalt, it was primarily for testing road materials and asphalt in combination, that laboratory was created.

Q. Do you recall whether or not Mr. Spotswood had any familiarity with the Core-Min-Oil prior to the time that you took these cores up to Martinez?

A. No, he had no connection, had never heard of it before, as far as I know.

Q. Do you remember approximately the time in February, 1938, when you took the cores up to Mr. Spotswood?

A. No, I don't recall any particular conversation.

Q. No; I mean do you recall the date particularly?

A. No, I don't recall the date, either.

Q. You would fix it as being in the month of February; is that it?

A. Mid-February, I would say, would generally encompass it.

Q. Now, if I understand you correctly, Mr. Spotswood made the ob- [615] servation to you—or perhaps to you and to Mr. Ruddle; you can clear that point up for me—that when these cores were fired in the electric or indirect fire oven this surface softening did not occur; is that correct?

A. That is right.

Q. How long after he started the tests at Mar-

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

tinez did Mr. Spotswood make that observation to you, do you remember?

A. It seems to me it was in the latter part of February.

Q. After you built the direct fire experimental oven at Martinez?

A. Oh, yes, we couldn't make the determination until we had the two side by side.

Q. You had a comparative test?

A. Then we had the comparative test. And then in order to definitely prove it, we brought a tank of carbon dioxide and piped carbon dioxide into the direct fired oven and spoiled the cores in there, which definitely proved the presence of carbon dioxide gas was the difficulty that was causing the cores to fail.

Q. Do I understand, then, that in a direct fire oven the open fire generates carbon dioxide which is exuded into the presence of baking cores?

A. Apparently that is the case.

Q. And that carbon dioxide in some way reacts with the chemicals in the product forming the core to cause this softening?

A. That is my assumption.

Q. That is your understanding of it, is it?

A. Yes.

Q. And so far as your judgment is concerned, that appears to be the problem that was created?

A. That was our chief problem to overcome, as we envisioned it at that time.

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

Q. And that problem did not exist when you operated in an indirect fire oven? A. No.

Q. An indirect fire oven, if I understand you, could either be an electric oven or a gas oven where the cores were enclosed away [616] from the flame, is that correct? A. That is correct.

Q. So long as you prevented the carbon dioxide generated by the flame from getting into the presence of the core, you overcame the problem of surface softening, or friability?

A. That is correct.

Q. Is that what you described it?

A. That is correct.

Q. That is the trade term, is it?

A. That is correct.

Q. Did you experiment with overcoming the problem of surface softening or friability by putting a hood or cover over the core in a direct fire oven during the baking?

A. We tried a number of experiments to see if we could adapt a procedure which would permit the successful making of a core in a direct fired oven. Hoods were made which were placed over a core and allowed to remain just free of the rack on which they rested. They were baked that way. Also, after the fire was turned out we tried to utilize the radiating heat from the pre-heated oven to meet our requirements,—anything that was feasible to get away from the presence of gas generated by combustion.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. And when you eliminated, if I understand you, gas from contact with the baking core your problem was non-existent?

A. That was what we felt at that time; that was our chief difficulty.

Q. That difficulty was definitely overcome when CO₂ gas was prevented from getting access to the baking core; is that correct?

A. Yes, it was.

Q. Now, continue with the general continuity of your story. I think I got a little ahead of the picture to some extent. After you performed these tests at the Vulcan foundry, and the additional tests up at Martinez, at which this determination was made that the presence of carbon dioxide, the product of [617] combustion, would produce the surface softening of the core, what was your next work in connection with Core-Min-Oil?

A. To see if we could put it through a foundry in regular procedure.

Q. Tell us just what you mean by that.

A. Well, these foundries—the Vulcan Foundry, to be specific, was occupied with contract work. Therefore, our opportunity for experimentation had necessarily to fit in with the least inconvenience possible to the people's occupation and the contracted work, and therefore it was impossible to have the utility or have the use of their ovens at such a time as we wanted, or turn off the heat when we would particularly choose. So we brought an electric oven—a small electric oven, from Martinez

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

and set it up at the Vulcan Foundry, which, while it was not large enough to give us anything in the way of a sustained run, permitted experimentation without the necessity of carrying cores from Oakland to Martinez. Then it appeared that it might be advisable to see if the Vulcan people would agree to having their ovens changed so that an indirect heat could be enjoyed for their service as well as ours, and we even went so far as to get estimates from sheet metal men as to the probable cost entailed.

Q. What was the approximate time of all of this? A. Time?

Q. Yes. When did this occur? A. Date?

Q. Yes, the bringing of the little electric oven to the foundry.

A. I would say March, possibly over into April.

Q. It was a continuous development, was it?

A. The picture continued, yes, from a very casual sort of a beginning until the possibilities—we figured that the difficulty existed of this baking trouble, and when we had isolated it, then it was felt that the only way that the procedure could be proved was to [618] put it straight through the foundry as standard procedure.

Q. Before we go into that, there was one other point: As I understand it, the cores that were made and baked out of the presence of CO₂ gas developed or generated in the combustion were sound, tough-surfaced cores; is that correct?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. They had the necessary resistance for foundry procedure to go ahead to make castings.

Q. For casting problems? A. Yes.

Q. Were they using for castings?

A. Which cores are you referring to?

Q. Cores made in the manner we have just described.

A. With Core-Min-Oil?

Q. With Core-Min-Oil, yes.

A. Occasionally we had several cores incorporated in molds and castings were made therefrom.

Q. At the Vulcan Foundry?

A. At the Vulcan Foundry.

Q. What type of castings, do you remember?

A. Nordstrom Valves.

Q. That is the Merco-Nordstrom valves?

A. There are Nordstrom valves of different sizes, and they go by numbers from very small, a few inches in size, up to maybe 15 or 18 inches. They are a standard valve, and apparently the Vulcan people had a contract to make them, and that was what our work consisted of, was making cores along those valve sizes.

Q. This was in February, was it?

A. No, I would say this was later than February. This was after the CO₂ difficulty had been definitely found, which I said was late in February, and I would say we were carrying on into March and April now.

Q. After you had isolated this problem and solved it as you have described, then you pro-

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

ceeded to make some castings, as I understand you.

A. Yes, we had tried at various times [619] to make castings, because unless they stood up under the heat of casting they were obviously no good to us.

Q. How did they stand up? Tell us about that.

A. The only way that a core has to stand up is to hold its shape until the molten mass has cooled, and then to be removed without undue effort.

Q. And these cores made of Core-Min-Oil baked out of the presence of CO₂ gas performed that function, did they?

A. They made successful castings from them.

Q. Did the foundryman at the Vulcan Foundry, like this man Manuel you referred to, express himself as to whether the cores made with Core-Min-Oil and the castings made from those cores were good, bad, indifferent, or what?

Mr. Aurich: I object to that as calling for hearsay.

A. I don't think that the coremaker ever passed an opinion on the finished casting, to my recollection.

Mr. Hackley: Q. Did he pass it on the cores?

A. He did, however, on the cores.

Q. And what did he say to you in that connection?

Mr. Aurich: The same objection.

Mr. Hackley: Q. Was this Manuel?

A. Manuel.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Tell me what he said about the cores.

Mr. Aurich: The same objection.

A. He was somewhat reserved. As I recall it, he was neither enthusiastic nor the reverse. We had some difficulty with the stickiness of the sand mix, which was slightly different from their usual mix, and all the coremakers made reference to the fact that it felt different in their hands, but that did not necessarily mean that they did not approve of it. They are experts in that when they look at a core, a finished core that [620] they have made, they evaluate it along the lines of cores that they have had experience with, and it has to be precise or they won't pass it.

Q. It is either perfect or rejected, one of the two, in their opinion; isn't that it?

A. That is correct; there is no half way.

Q. And they accepted these cores made with Core-Min-Oil?

A. Not all of them; some of them.

Q. What ones did they reject?

A. Those that would stick in the upper half of the mold, or what is called the cope.

Q. That is the cope of the core box?

A. The cope is the upper half of the mold, the drag being the lower; and the material, the sand,—any core sand is put in there, pressed into the interstices of the drag, and then a sufficient amount is put in there so that when the upper half comes down and fits, it compresses it. Then it is pounded

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

with a mallet in order to settle the grains, and the upper half lifted off. If there is any adherence due to stickiness or any other factor, it automatically removes a portion of that core and then it has to be thrown out.

Q. Did that sometimes occur, do I understand, with Core-Min-Oil? A. Yes, it did.

Q. Not all the time, or anything of that sort?

A. No; intermittently.

Q. Did you discuss castings which were produced from cores made of Core-Min-Oil with anyone at the Vulcan Foundry? A. Yes.

Q. With whom?

A. We talked to Harry Leas, and a pouring boss by the name of Sheehan, and they looked these castings over and pronounced them satisfactory.

Mr. Aurich: I move to strike out the latter part of the witness' answer as to what Mr. Leas and anyone else may have said [621] at the Vulcan Foundry as being hearsay.

Mr. Hackley: Will you continue now with your general narrative, Mr. Waller, please?

A. Mr. McSwain felt that it was absolutely necessary that the procedure and the use of Core-Min-Oil be definitely proven by foundry practice. In other words, it was his idea that before we could arrive anywhere in the matter of sales of any such product, we would have to tell a potential purchaser that it had been used definitely in some foundry as standard procedure, and then after the friability

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

due to carbon dioxide gas had been discovered and put in its proper place——

Q. Isolated?

A. That is correct—our procedure then was to endeavor to have the material Core-Min-Oil used in the foundry if it was in any way possible; but the matter of the storage of mixed sand—by that I mean core sand mixed with the necessary ingredients that would permit an operator to make a core from it—had to have certain storage value or life.

Q. The mixed product had to have a working life of a given length of time; is that correct?

A. Yes, to a certain extent. It had to last during a day without hardening unduly. The linseed oil which is used is usually covered up with a piece of heavy burlap sacking to prevent aeration. It was found that the product—the sand mixed up with Core-Min-Oil—had a shorter life period; in other words, it got sticky and harder due to aeration. It presented difficulties in that respect which prevented further consideration of putting it through the foundry as a standard core binding medium in lieu of linseed oil.

Q. What was then determined to be the approximate working life of Core-Min-Oil mixed core sand?

A. It wasn't by any tech- [622] nical means; it was by trial and error. In other words, if it felt hard or resistant in the coremaker's hands, he had

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

a tendency to discard it as it had passed its pliability stage.

Q. About how long did it remain exposed for example to the air before it reached that stage that you have just described, before it was rejected?

A. My observation was that it was variable, due largely to the humidity present in the air. A cloudy day, cool—relatively cool—we enjoyed a longer period of workability than low humidity and warm circulating air.

Q. Did covering the mixed core sand with a damp burlap sack, or something of that sort, help to preserve the working life for a longer time?

A. Yes, we utilized the covering exactly the same as the procedure had with the other, accorded it exactly the same protection.

Q. As with linseed?

A. As with linseed. But the difficulty when the mixing man or the individual whose duty it is to make up the day's supply of sand—it was obvious that we couldn't get enough material through and preserve it, and furthermore, we were in difficulties as to the correct proportioning.

Q. When were these problems recognized, in point of time?

A. They grew as time went on. When we got out of the experimental stage of individual cores in an electric oven and the horizon widened out a little bit as to commercial application, these various problems became more acute; we were aware of

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

them; we hadn't been in the light individual experimentation previously.

Q. This, then, would be along in the latter part of March, or something like that?

A. Oh, I would say we had gone past that into April.

Q. Down into April, now.

A. There was a period, there, you [623] see, where there was a lot of experimentation done over there at Vulcan. It sounds as though it should have been found out next day, but where you take trial and error, there are very many avenues; you have to run down blank leads in order to eliminate them, and that took quite a little time.

Q. Continue with your general narrative, please.

A. My time was completely taken up during April and May in the work of following through with the various experiments or trials that we were undertaking to get this into a commercial bracket where it would be used in lieu of the regular linseed oil. And samples of Core-Min mixed sands were taken over to Martinez and there were baked in ovens in the form of cubes, bars, small beams—various things that an uninitiated man could mold—and tests were undertaken there to determine the length of time necessary to bake satisfactory cores, in order to determine a saving that might be enjoyed through the use of this medium.

Q. Saving in baking time?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Yes, a saving in baking time would permit a more rapid sequence of use of the ovens and thereby increase production.

Q. Your per-core-cost would be lowered?

A. That is right.

Q. Directly as you saved in time of baking of the core; is that correct? A. That is right.

Q. Do I understand that cores made with Core-Min-Oil baked more rapidly?

A. I believe that that was definitely determined, though I don't remember the exact saving time in per cubic inch, or whatever the unit was upon which they were evaluated.

Q. Everything else being equal, a core made with Core-Min-Oil baked in less time to the same unit—— A. That is correct.

Q. ——than with any other known core oil?

A. Any other core oil [624] that I had anything to do with.

Q. By the way, what core oils did you have anything to do with?

A. Only linseed oil, although there was an oil called Houghton Oil. I never saw any cores made of it. I saw a sample of it and had my hands in it. I believe Mr. Ruddle had some of it, and that is where I saw it. And at another foundry I believe I saw some fish oil or some animal oil. But as far as my actual experience in a foundry is concerned, I had no experience in the making of cores wherein

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

anything but linseed oil was used, to my knowledge, other than Core-Min-Oil.

Q. Your comparisons, then, with standard foundry practice, or standard core oils as against Core-Min-Oil are based, then, on Core-Min-Oil as compared with linseed oil; is that correct?

A. That is correct.

Q. Is linseed oil the same as Linoil?

A. I couldn't say.

Q. Do you know of a product called Linoil?

A. No, I do not. I remember hearing it used, but I don't remember now the definition that went with it.

Q. It may have been just another name for linseed oil?

A. It might have been an abbreviation.

Q. You were describing these comparative tests made up at Martinez, baking time determinations or whatever you call them.

A. Strengths under stresses, loadings whereby a core was supported at either end and a load applied in the middle and recorded as the strength of the core per unit.

Q. This work was done when, Mr. Waller?

A. I did not have anything to do with it directly.

Q. Was this done by Mr. Spotswood?

A. But I heard of it, saw them when I went to Martinez, observed the work going on there, and I would say it was probably in May and possibly car- [625] ried on into June. I couldn't say exactly

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

how long they worked at it or when they abandoned it, or what they did; I just know that the materials were there and the apparatus was there.

Q. That was the apparatus that you referred to a few moments ago, developed to perform tests corresponding to the standards of the American Foundrymen's Association? A. That is correct.

Q. That work was done under the direction of Mr. Spotswood, was it?

A. That was done at the laboratory under Mr. Spotswood.

Q. And reports on it came to your attention, I suppose?

A. Yes, they were discussed in my presence, although I do not think formal reports were ever submitted to me. I had access to the information and informally observed it—read it.

Q. What were the general findings resulting from those tests at Martinez?

A. I don't think that they were,—to my recollection they were not correlated definitely with other procedure, although there were definite figures given as to times necessary for the baking and the strength. I recall that there were such things, but I don't recall what they were.

Q. Do you recall how the tests of the results obtained with Core-Min-Oil compared with results under like conditions with linseed oil made cores?

A. Do you mean as to the strength of the core?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Strength, for example, yes.

A. Well, I think that they were—while I don't remember the actual figures, I think that they were of sufficient worth to place the Core-Min in a position that it was fully the equal as far as strength was concerned of linseed.

Q. What other types of tests were performed of a comparative nature, do you know?

A. I believe that they changed the grading of the sand—by “grading” I mean the particle size of the [626] individual grains—to ascertain if, by making a more porous core, the heat could go more quickly into the depths of the object and thereby dry out rather than having a dead sand which would take a longer time to drive the moisture out of the core and make it a wholly baked article.

Q. The thought being to lower the baking time of the core?

A. That is right,—the idea being to make a cube or a series of cubes all out of the same batch of sand and Core-Min-Oil, and then penetrate into them, taking out different ones at different times out of the oven, to find out how rapidly the heat made itself manifest in the interior of that cube, and the point of complete baking,—from which a graph was made to show baking time in proportion to volume.

Q. To develop an optimum formula for baking and core-making; is that correct?

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. I don't think it had got to a point of formula. We were trying to get data.

Q. Do you recall what results were determined in that data?

A. No, I don't. I didn't carry through far enough; I was taken, reassigned to other work before anything of that nature reached a completion or a culmination, and I never heard——

Q. Was that reassignment the transfer to Seattle that you spoke of? A. That is right.

Q. In October?

A. No, no, I was—I correct that. It was about mid-June that I took up my regular work of collaboration with field engineers and dropped my work with Core-Min-Oil and foundry practice, and it was not until the last of October that I left for Seattle.

Q. Mid-June you were transferred to field work, you say?

A. Picking up work that I previously did before I was assigned to Core-Min-Oil. [627]

Q. And that field work had nothing whatsoever to do with core-making or the core-making industry; is that correct?

A. You mean that change had nothing to do with it?

Q. Yes, I mean it did not take you into the core field at all?

A. I don't think any particular reason was ever given as to why I was changed. In other words, the

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

work that I had been doing had not been done by anybody in the interim, and the construction season was well advanced, and being an engineer, my work was logically along those lines that I was originally hired for, and I presume that Mr. McSwain wanted me to pick up my work, and consequently reassigned me. I never did ask him.

Q. The new work that you went to had nothing to do with core-making, if I understand you; is that correct? A. After mid-June?

Q. Yes.

A. No, nothing whatever. I only heard of it from time to time when I would be back in the City, or something of that sort, but never anything in a chronological order, or in detail.

Q. What was the nature of your inquiries when you were back in the City with reference to Core-Min-Oil? Just curious to know how the product was coming along?

A. Oh, casual inquiry was all. The field is far-removed from the orbit in which I usually move, and as a consequence it would be a case, as I say, of just passing interest and information, because I was doing directly something else.

Q. If I get the picture, then, you were almost exclusively—I guess we can say “exclusively”—devoted to the product of Core-Min-Oil for a period of virtually six months?

A. No, not that long.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Up to mid-June?

A. I would say it would probably encom- [628]
pass about February, March, April, May, and may-
be half of June; I don't remember the exact date.

Q. From approximately the time that the work
was transferred to the Vulcan Foundry from the
Macauley Foundry until you were reassigned to
your old engineering work?

A. That is correct.

Q. I am just trying to get the picture.

A. That is right.

Q. And that is what I understand from what
you have indicated.

A. That is right. I want to assist you.

Q. Now, Mr. Waller, what more can you tell us
in the general narrative of the work that was being
done with Core-Min-Oil, with particular reference
to getting it into the production phase in the found-
ry during the period you worked with it?

A. I don't know that there was anything more.
We had the responsibility of trying to correlate the
foundry procedure with the product that we were
interested in. And I think I have told you, while
not in detail, but in general, as I understand you
want it, what our work consisted of, and what our
aims were. The only other part of the procedure
might be the fact that the Shell Development Com-
pany at Emeryville undertook to look into the mat-
ter of Core-Min-Oil from a commercial standpoint,

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

and I am not a chemist, so I wasn't definitely assigned to that.

Q. That work was done at Emeryville in the laboratory and not under your direction; is that correct? A. That is right, at Emeryville.

Q. You were present, I suppose, at general conferences where men from the Emeryville laboratory reported on their work?

A. No, I wouldn't say that I ever attended a conference that they reported on it.

Q. Did you ever discuss Core-Min-Oil with Dr. Wright? A. No. [629]

Q. Do you know Dr. Wright?

A. I don't know Dr. Wright.

Q. Did you ever discuss it with any of the men at Emeryville? A. Yes, with Dr. Tuemmler.

Q. Tell us about that, and particularly when the discussion occurred.

A. I believe it was about the early part of June, possibly a few days one way or the other; and Dr. Tuemmler, whom I was talking to at Emeryville, asked me some questions about Core-Min-Oil, and how we used it, and how it was mixed. And he already had samples of it. And in order to familiarize himself with what I knew, he rather generally asked the questions relating to procedure and operation in the foundry.

Q. Where did this discussion take place? In San Francisco? A. At Emeryville.

Q. At his office in Emeryville?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. At his office in Emeryville. That is the only place I have ever talked to Dr. Tuemmler.

Q. No one else was present, I take it?

A. There may have been somebody in the office, a stenographer or not; I couldn't say.

Q. You don't remember anyone?

A. But other than that, no companion of mine.

Q. No one else was in the conversation as such?

A. No, I don't recall that there were.

Q. You have given us a general synopsis, as I understand it, of the developments relating to Core-Min-Oil as you observed them during the period from your first contact with Core-Min-Oil in early January, 1938 to the time that you were taken off that work and assigned to something else about mid-June of the same year?

A. I have tried to give you that.

Q. Can you give us anything more definite with reference to what the general conclusions were as to the product—conclusions [630] which you drew as to its utility?

A. My conclusions?

Q. Yes, your conclusions.

A. Not anybody else's?

Q. Just what you, being exposed to the product and working with it as you did, what your conclusions were, or reactions.

A. In general, I would say that the impression was gradually forced upon me that we had more and more difficulties facing us, as far as the successful sale or incorporation of our product emul-

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

sified asphalt was concerned as a component part of Core-Min-Oil than we had originally any idea of. These impressions came gradually, due largely to our experiments, the experiments of others, and, finally, in conversation with Dr. Tuemmler it developed that he felt that the solution did not contribute anything particularly to the making of a core; and in support of that told me that he would make up a variety of solutions and let me try them out to see if they would make cores in the foundry.

Q. Cores equal in every respect to cores made with Core-Min-Oil—is that what he said?

A. That is correct. In other words, he figured that, and conveyed the idea to me, that solutions could be made up which in no wise had anything to do with Mr. Ruddle's Solution as far as being parallel or the same thing, that would do the same work. And he gave me a few days later seven gallon cans, as I recall——

Q. Seven one-gallon cans?

A. Seven one-gallon cans marked from 1 to 7, and one of them, he said, contained the Ruddle Solution, though which one I didn't know. And I took these to the Vulcan Foundry——

Q. Did he state what the other cans contained, by the way?

A. I didn't understand that. One of the other cans?

Q. No, all of them.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. No. I took the seven cans that he [631] gave me, and that was all.

Q. I don't think you got my question. Did he tell you what was in each of the other six cans?

A. He told me there were solutions in there that he wanted me to try out to see if I could make cores from.

Q. But he did not tell you what those solutions were? A. No, never did.

Q. They were just numbers to you?

A. They were just cans full of liquid to me.

Q. With numbers on them?

A. That is all, with numbers on them. And I took these to the Vulcan Foundry, and these notes which were referred to earlier in the conversation, here, are the notes taken by me at that time in the making of cores with all seven different solutions.

Q. You have indicated the notes which we have identified as Waller Exhibit 1; is that correct?

A. Identify them as how?

Q. Waller Exhibit 1? A. Oh, I see.

Q. That is our technical definition. If I refer to Waller Exhibit 1, I will be referring to those notes. A. I see.

Q. When you refer to them I wish you would refer to them as Exhibit 1, and it will simplify our record a little bit. A. All right.

Q. These notes that you have presented as Exhibit 1, here, represent the story of findings made

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

by the utilization of each of these seven products, whatever they may have been, in the making of cores; is that correct?

A. They represent my observation in the incorporation of each of these liquids to sand at the Vulcan Foundry, from which the operator later made cores.

Q. You don't know which one of these seven is Core-Min-Oil; [632] is that right?

A. I never knew at the time.

Q. Do you know now? A. I know now.

Q. Which one?

A. The last-mentioned, No. 7.

Q. Is there anything on those notes indicating that No. 7 is Core-Min-Oil (handing papers to witness)?

A. No, there is nothing whatever in the notes that indicates what any of them are.

Q. You say that you know No. 7 is now. How do you know that?

A. Well, reference to the file shows Dr. Tuemmler's interpretation. In other words, he notes what they were; he made a record it, and I have since seen his record.

Q. You reported back to Dr. Tuemmler on your tests with these seven products; is that correct?

A. I made a report which possibly got to Dr. Tuemmler, though I did not make it directly to him. I reported to Mr. McSwain.

Q. In writing?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Yes, typewritten. I made a report at the time after the carrying out of these tests.

Q. Later you saw Dr. Tuemmler's reports as to what those seven products comprised; is that correct?
A. Oh, a long time after.

Q. When did you see that report?

A. Oh, I saw that report about 1939—along in there somewheres.

Q. Do you remember when in 1939?

A. At the time we had a conference here at San Francisco, where—I think it was January, 1939, if I am not mistaken; I was present at that time.

Q. January?
A. I think it was January.

Q. What was the occasion of that conference?

A. Well, the Asphalt Department called all their men in from various parts of the Coast, and it was purely a conference of representatives in connection with sales, ways and means of marketing, and new specifications, and work of that sort, like any other conference that might be called by a company. [633]

Q. In other words, it was a general annual sales conference, is that right?

A. That is right.

Q. You hold that conference every year, do you?

A. No, they are irregular. There was one this year, but there was none last year.

Q. Presided over by Mr. McSwain, I assume?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. That is right.

Q. Did Core-Min-Oil come up for discussion in that conference?

A. Oh, no, there was nobody else had any connection with it, as far as our organization was concerned, so there was no connection, whatever.

Q. I am going to ask you to mark in ink—and I am handing you a pen—the name “Core-Min-Oil” on the seventh page of your notes, Waller Exhibit 1. [634]

Q. You stated that you made the determination that No. 7 was Core-Min-Oil, and if I understood you you stated that you gained that from some report which you observed made by Dr. Tuemmler.

A. I don't think that you undersand me correctly.

Q. I would like to have a clear understanding on that, please, Mr. Waller.

A. I made no determination at all; I simply saw a report which had to do with the numbers 1 to 7 solutions, and from that I found out which was which.

Q. When did you determine that fact?

A. When?

Q. Observe that report, yes.

A. I said about January, 1939.

Q. It wasn't until that date; is that right?

A. No.

Q. How did you happen to look at that report at the time? Was it shown to you by someone?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. No, I think I asked—the question had never been settled in my mind, and I had performed these tests and never knew.

Q. Your curiosity had been aroused and never been satisfied; is that it? A. Probably.

Q. You note the date of those notes, Waller Exhibit 1, is June 10, 1938. Is that just before you were assigned to other work?

A. Oh, yes, that was one of the last assigned operations, if not the last, that I recall undertaking in the working with Mr. Ruddle, and Spotswood, and others in connection with Core-Min-Oil. [635]

Q. When we adjourned for a noon recess, Mr. Waller, we were talking about the seven samples which were given to you by Dr. Tuemmler and which were prepared into cores at the Vulcan Foundry; is that correct? A. Yes.

Q. Were those cores used for castings, if you know? A. I don't remember.

Q. Did you learn the formulation of any of those seven products that Dr. Tuemmler gave you other than Core-Min-Oil? A. No, I did not.

Q. Neither at the time nor in 1939 when you looked up the record?

A. Neither then nor later.

Q. Do you know the formulas of those products now? A. No, I do not.

Q. Have you ever seen any report in which those formulas are set forth?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Only a report I referred to this morning.

Q. The one which you observed in 1939?

A. That is correct.

Q. That report was in Mr. McSwain's files, was it?

A. I couldn't say whose files it was.

Q. Where was the report?

A. At the Shell office. Whose files it was I don't know.

Q. How did you get hold of the report? What procedure did you go through?

A. I probably asked what the outcome of the matter was.

Q. Who did you ask? Mr. McSwain?

A. I don't recall.

Q. Did you have any other contact with the subject of [636] Core-Min-Oil at all other than the period prior to your being reassigned in mid-June to another task and this brief occurrence in January 1939 that you have testified about?

A. I wasn't definitely assigned to any work in that period, although conversation undoubtedly was indulged in with others as to the progress of the experimentation.

Q. Do you have any recollection of those conversations?

A. No.

Q. In the course of your work in connection with Core-Min-Oil did you make any study of a possible market for the product?

A. No, I never made any study for a market.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Was any study made with which you are familiar? A. Not to my knowledge.

Q. You have no indication of anybody in connection with the Shell Company attempting to study the potential market for Core-Min-Oil?

A. I was not identified with it.

Q. Was such a study made?

A. If there was any, I wasn't identified or I don't know of any.

Q. You mean by that you don't know of any such study; is that it?

A. I don't know of any study being made.

Q. And you have never seen any report relating to such a subject; is that correct?

A. I have never seen any report relating to it.

Q. Do you know of any attempts which were made to market Core-Min-Oil at any time?

A. No, I don't.

Q. You were never instructed to put the product on the market, were you? A. No.

Q. Never instructed to attempt to find a customer or customers for Core-Min-Oil?

A. No.

Q. At the time you completed your work with Core-Min-Oil in mid-June 1938, what would you say was the general status of the [637] studies of the product and the conclusions which were drawn by you with reference to it?

A. Whatever answers I could make to that would only be my own conclusions.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. That is what I am asking for. You were assigned exclusively to that work at the time, and I would like to know what you concluded at the close of your assignment.

A. Well, my personal conclusion was that we had encountered far more difficulties than we had anticipated, and that as far as my activity was concerned, the matter had a bigger horizon in difficulties than I had anticipated.

Q. Let us take that up specifically. As I remember your testimony, the first problem which was encountered was the one Mr. Ruddle told you about at the very start, namely, that certain cores under apparently the same conditions were soft, while others were firm? A. That is correct.

Q. That difficulty was overcome by the recognition of the source of the softening, namely CO₂ gas from the direct fire; is that correct?

A. Yes.

Q. And it was determined then that in order to overcome that difficulty all you had to do was prevent CO₂ gas from getting at the core during baking; that is correct, isn't it?

A. That was our idea at that time.

Q. What other difficulties do you have reference to that were encountered during the course of your association with Core-Min-Oil?

A. The impossibility of making the binding ingredients up in a single solution or a single combination.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Tell us just what you mean by that.

A. At each instance when the binding ingredient which included Core-Min-Oil, sand, et cetera, for cores was made up, individually the component parts were proportioned and added separately [638] to the sand.

Q. If I understand you now—and we will refer to Waller Exhibit 1 and the formula on the reverse side of the first page—as a matter of procedure, when you came to make up a core mix, you took sand and first you added your solution in the number of parts required for the formula?

A. That is right.

Q. Dependent on the amount of sand present, of course? A. That is right.

Q. And then you added separately as the next step, or another step, the asphalt emulsion; is that correct? A. That is right.

Q. So you had two steps to follow to prepare a core mix with Core-Min-Oil; is that correct?

A. Allowing the sand as constant, that is correct.

Q. Yes, assuming the sand to be constant. We have to make that as an assumption, don't we?

A. Yes.

Q. Now, Mr. Waller, did it make any difference whether you added the solution first and the asphalt emulsion second, or vice versa?

A. I couldn't say.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Do you have a note that it was done both ways?

A. I don't recall any instance where it was done—the procedure was altered.

Q. The procedure was always first add the solution and then add the asphalt emulsion?

A. I refer to this Exhibit 1——

Q. Waller Exhibit 1?

A. Exhibit 1, under the heading of "Procedure": "Sand measured. Solution added and hand mixed. Emulsion added and hand mixed and riddled."

Q. What does riddled mean?

A. Riddled—there is a box in foundry procedure which has a wire mesh bottom with about a four-inch-square edge, and in order to achieve a mixture, sand is shaken through this riddle, and that is called [639] riddled sand.

Q. The device is called a riddle, is it, that you have described?

A. To the best of my recollection, riddle is correct.

Q. What is the purpose of doing that? To make a homogenous mix of sand and oil and solution?

A. To disperse ingredients evenly throughout the sand.

Q. So that you have a mix of even texture with reference to all ingredients; is that correct?

A. That is right.

Q. Did you ever prepare a core mix using the

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

solution and asphalt emulsion as a single liquid?

A. No.

Q. You never saw asphalt emulsion and the solution first mixed one with the other and then mixed with the sand? A. No.

Q. Do you know of any attempts that were made to do that? A. No, I don't.

Q. Now, just what do you mean with reference to this single combination? You said that a difficulty was that the product could not be used as a single combination. Did you mean that Core-Min-Oil was in fact two separate liquids and could not be made into a single liquid? I am trying to understand what you meant, in other words.

A. That is in general what I meant—the fact that you had to have two separate operations in order to get your complete binding ingredient with the sand, as opposed to a single admixture of linseed oil to sand in regular foundry procedure.

Q. You are familiar with the fact that in regular foundry procedure it is customary to add progressively several different ingredients to a core mix, are you not? A. I don't remember.

Q. Other than the fact that the foundry man, or core maker, whatever he is called, who mixes the sand and these ingredients, [640] had to make two steps in his mixing operation, what objection is there to the fact that the products are separate one from the other, the solution and the asphalt emulsion?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. The core maker, as far as my observation went in the Vulcan Foundry, never mixed linseed oil and sand under any circumstances. It was brought to him in a mixed condition.

Q. Mixed at some remote point?

A. It was brought by the mixing man from the mixing device and placed at his disposal on the bench where he could get it.

Q. I think possibly my question wasn't clear there. What do you call the man in the plant who mixes the sand and core oil, whoever he may be?

A. I don't know what his correct title is; I would call him the mixer man.

Q. Let us call him the mixer man, then. Now, other than the fact that the mixer man, as you have termed him, had to put in the solution and the asphalt emulsion in separate steps intermediate of the second of which he went through a mixing process according to the procedure illustrated on Exhibit 1, what objection was there to having the product in two parts, the solution as one part and the emulsion as another?

A. It would have to be sold and marketed packaged separately.

Q. What objection is that? I don't understand, in other words.

Q. You have double everything. Instead of a single container, you have two. You have double handling. You have pyramided the factor by a hundred per cent; you have doubled something.

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

Q. You haven't doubled your total volume of your product?

A. It isn't the total volume. You have packaged the total volume two ways. You have split it. Therefore, it would have to be—as far as known at that time, mixed in that way would make two operations instead of one. [641]

Q. When the product was presented to the Shell Oil Company by Mr. Ruddle in January 1938 it was in that form in two packages, wasn't it?

A. Yes.

Q. Did Mr. Ruddle ever show you any method of packing it in one container? A. No.

Q. So that the two could be sold together?

A. Not to my knowledge.

Q. That was a problem which you, the Shell Oil Company, considered to be present and which you felt was an objection; is that right?

A. It was a marketing feature; it was something that had to be considered in the potential placement of the product.

Q. If I understand the situation correctly, Mr. Waller, what that meant was that a foundry man going to buy Core-Min-Oil would buy two separate lots of product, one the solution and the other asphalt emulsion, is that correct?

A. That is correct.

Q. And then would use them in accordance with whatever formula was prescribed, drawing from

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

one container for the solution and from another container for the emulsion; is that correct?

A. That would have been the procedure at that time as far as we knew.

Q. Now, other than the fact that you would have to ship the product, we will say a tank car of solution and a tank car of asphalt emulsion and thereby have two tank cars, what would be the objection to that procedure, either from the standpoint of the seller or the standpoint of the buyer? I would like to find out.

A. In any operation of manufacturing it is desirable to eliminate all movement and necessary manipulation to a minimum. Another point: If these two were to be handled separately there would be no assurance that our emulsion would [642] necessarily be used.

Q. In other words, while you might sell the solution, the foundry man might buy Standard Oil's asphalt emulsion instead of Shell; is that correct?

A. That would have been a possibility.

Q. And you weren't interested in building up a market for Standard Oil or Union or somebody else, were you? A. No.

Q. Now, you mentioned the fact that it is always desirable to reduce the number of operating steps in the manufacture of a product. If I understand you, by that you mean that it is desirable, if you have a five-step process, to reduce it, if you can, to a three-step process?

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. I would say so.

Q. And if you have a three-step process, it is desirable, if you can, to reduce it to a two-step process? A. That is right.

Q. But that has nothing to do with the usefulness of the ultimate product, does it?

A. Only so far as the costs incurred in the duplication of handling affect the economics of its utility.

Q. Now, let's take up that point; it may be a little out of order in our general continuity here. Did you make any study of the cost of production of Core-Min-Oil? A. No.

Q. Did you make any study of the cost of competitive products such as linseed oil?

A. We knew what linseed oil was costing, what the market was.

Q. What was the approximate market price?

A. I can't remember at this time.

Q. What was it compared to the cost of asphalt emulsion in broad terms?

A. Asphalt emulsion by itself?

Q. Yes.

A. It was considerably greater, but how much I couldn't say.

Q. Let's see if we can work this out another way. Is the asphalt emulsion sold by the tank car or by the barrel or what? [643]

A. It is sold by the barrel or by the tank car, either one.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. In 1938—let's say in January 1938; you are familiar with the asphalt market, that is one sure thing—what was the price in tank car lots of asphalt emulsion? A. I couldn't tell you.

Q. Can you approximate it at a per gallon price?

A. It could be very easily verified, but I couldn't tell you at the present time what it was.

Q. Well, could you give it to me within a certain range?

A. No, the price fluctuated quite a little. It has fluctuated for some time. One month's price might be different from another's.

Q. What is the price today?

A. Where? At the point of manufacture?

Q. In San Francisco. Right here in San Francisco. A. Of what grade asphalt emulsion?

Q. I don't know anything about asphalt emulsion. I will have to put myself right in your hands. The type of asphalt emulsion, Y-104, that was used in this product Core-Min-Oil.

A. I don't know definitely the price, but if you want me to guess, I would say it is in the neighborhood of seven cents a gallon in carload lots.

Q. And in fifty-gallon drums?

A. It would be considerably higher.

Q. Eight or nine?

A. Probably around ten or eleven.

Q. And in January 1938 the price scale was running a little lower than it is today, wasn't it?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. It might have been; I don't know. Sales volumes are not my particular responsibilities.

Q. Your problem is more an engineering problem? [644]

A. Engineering in the field.

Q. You are generally familiar with the fact that asphalt emulsion of the class of Y-104 sells in the neighborhood of seven cents a gallon in carload lots, maybe up a little bit at one time, maybe off just a trifle at another, but it is in that general neighborhood; is that correct?

A. Yes, that is correct.

Q. Do you have any idea, or do you know anything about the price of linseed oil in tank car lots in January 1938?

A. No, I have no recollection of it.

Q. Have you ever had any idea what the price of linseed oil was in tank car lots or otherwise?

A. Yes, I did know in 1938, because I bought a gallon or two; but I don't remember now what I paid for it.

Q. You paid probably \$1.05 or \$1.08, something like that, didn't you?

A. I don't remember.

Q. I don't know whether it is testimony or not, but I am in the paint manufacturing business and buy linseed oil all the time in tank car lots. I am like Mr. Waller, I can go and find out and tell you just what the price was.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Have you ever made any calculation of the price of the solution which went to make up Core-Min-Oil? A. Never knew.

Q. The largest part of that solution was sodium silicate; isn't that true?

A. That is my understanding.

Q. Something more than ninety per cent by volume?

A. I don't know the proportions.

Q. A very large part, however?

A. Yes, I understand that is right.

Q. Do you know what the price of sodium silicate is? A. No, I don't. [645]

Q. Have you ever known, say in tank car lots?

A. No.

Q. Don't know the approximate price?

A. No, I don't.

Q. It is a matter of just a few cents a gallon, isn't it?

A. That I couldn't say if I don't know.

Q. I thought possibly you have a broad idea without knowing the definite figure.

A. No, I do not.

Q. I am not trying to hold you to any exact figures, Mr. Waller; you are qualifying your statements on those things perfectly properly. All I am interested in is in getting a general picture of some of these things. Although your information might not be accurate, but you know a lot closer than I do, and I would like you to give me what you can.

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. I am perfectly willing to give you anything I know, but what I don't know I don't want to guess at.

Q. Naturally, I don't want you to. Did you ever make any calculation to determine what the cost of preparation of a core mix with Core-Min-Oil was in contrast or comparison with the cost of preparation of a like amount of core mix with linseed oil,—that is, assuming that we are following the procedure in making a Core-Min-Oil core mix as illustrated in Waller Exhibit 1, and in preparing a linseed oil core mix there is merely the addition of linseed oil to core-making sand.

A. I never made any such calculation.

Q. Do you know if one was ever made for the company? A. No, I don't.

Q. Why do you say that it would cost more to make a Core-Min-Oil core mix than a linseed oil core mix? Merely because there are two steps in the Core-Min-Oil core mix manufacture?

A. Two operations against one would automatically increase the time element. [646]

Q. You are sure of that? A. Yes.

Q. It is true that if you take just exactly as long in mixing the solution as in mixing in linseed and in mixing in the asphalt emulsion as in mixing in linseed, it would take twice as much time to make the Core-Min-Oil mix as the linseed oil core mix. But do you know of your own knowledge that it is necessary in order to make a Core-Min-Oil core mix

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

that you must mix each step as long as the linseed oil step?

A. I don't know what you mean by linseed emulsion mix.

Q. I did not say "emulsion" there. There was no word "emulsion" in there.

A. What did you combine with linseed oil there?

Q. Sand. I will go at it this way—possibly I can simplify it: If I understood your testimony, you never timed the length of time which it took to mix the solution with sand in proper fashion.

A. No.

Q. And you never timed the length of time it took to mix the asphalt emulsion with sand.

A. No.

Q. As a matter of fact, you never timed the length of time that it took to make the linseed oil core mix? A. No.

Q. Therefore, it is only speculation on your part that it takes longer to make a Core-Min-Oil mix than a linseed oil core mix; isn't that true?

A. I wouldn't call it speculation.

Q. I am trying to get some foundation for your statement. I haven't been able to get one. Maybe you can give it to me.

A. If you lift this and put it over here, that takes some time (indicating ashtray). If you lift it and put it over twice, it takes twice as much time.

Q. Unless you move twice as fast.

A. Unless you compensate.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. I will put it this way: Mr. Waller, I don't mean to be [647] argumentative with you here, but you have made a statement which I can't follow. You may be entirely correct, but I have not been able to find any foundation for it in your knowledge yet. Now, I want you to straighten me out if I am wrong. Do you know of your own knowledge as a matter of fact that it takes any longer to make a Core-Min-Oil core mix than a linseed oil core mix—now, of your own knowledge.

A. No, I don't.

Q. What other—

A. May I explain it?

Q. Yes, you may. If you have something you would like to add, you go right ahead.

A. I would like to add the fact that, based on our experience, the way in which we were forced to mix the ingredients, it unquestionably was a longer process the way we had to do it than the way it was done in large quantities in the Vulcan Foundry with linseed.

Q. What was that attributable to, if you know?

A. One was a well-founded, thoroughly understood procedure of regulation routine. The other came under the head of experiment. The facilities were not available for our particular purpose, but they were built in primarily for the purpose of facilitating the linseed core sand mix.

Q. In other words, the linseed mix was being prepared under conditions which were the product of long experiment, long usage, and under ideal conditions substantially?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. That is exactly correct.

Q. And the mixing of Core-Min-Oil core sand was under conditions that were very new to you and without the benefit of all the refinements and apparatus that you might otherwise develop?

A. Yes.

Q. Is that right? A. Yes.

Q. There was opportunity, in other words, for progress in [648] simplification and refinement of methods of mixing Core-Min-Oil core sand?

A. There was nothing there to facilitate it, no.

Q. But there was plenty of opportunity in point of time, as you learned more about it, for a movement toward simplification; isn't that correct?

A. No, we couldn't alter procedure in a foundry that was doing contract work to suit ourselves; we had to fit in.

Q. I understand. I don't think you understood my question. I merely meant by that this: You were mixing Core-Min-Oil core sand under comparatively adverse conditions? A. Yes.

Q. And as those conditions improved, the mixing process might be improved and simplified and facilitated; isn't that true?

A. It was possible, yes.

Q. Now, what other difficulties did you encounter in connection with Core-Min-Oil? You have named the CO₂ gas, the solution of which you have described. You have mentioned the fact that the

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

product could not be sold in a single package. What other things do you have in mind?

A. It had a tendency to stick.

Q. Stick where and how?

A. In the core box.

Q. That was a tendency, you say?

A. It had a tendency to stick. By that I mean that not in all cases did it stick, but in some cases it stuck.

Q. What percentage of time did sticking occur, if you remember?

A. I would have reference to Exhibit 1 as my notes on the various solutions there.

Q. Now turn to the seventh test, which you said this morning was the Core-Min-Oil test. As I read that report, I understand that in the first attempt to carry out that test, some sticking occurred and those cores were thrown out and you started over [649] again,—that sticking having occurred not because of anything to do with Core-Min-Oil, but, as your notes say, the sticking occurred due to the fact that there was some condition in the core box carrying over from previous cores; is that correct?

A. No, the reason of sticking was due to adherence to the core box; but if it did not stick with the linseed, then the core box could be used indefinitely, but it did stick with this.

Q. Now, if I can read your writing here, it says here that, "Cores first and second Lac good looking cores. Workability, color, etc., similar. Core stuck

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

on 2nd after powd." Will you explain just what you meant by this language in the first four lines?

A. Yes. The first and second cores had Lac-podium put in the core box.

Q. What is that, please?

A. It is a vegetable powder that is shaken out through the meshes of a sack which has a tendency to dust the inside of the core boxes.

Q. Like you would put flour in a baking tin when you are going to make muffins?

A. That is a good simile. "Workability, color, etc., similar."

Q. You skipped one line: "Good looking cores." What does that mean?

A. Good looking cores.

Q. It means just what it says, I suppose?

A. From visual inspection they were good looking cores. "Workability, color, etc., similar." Do you want—

Q. Similar to what? A. To each other.

Q. They both appeared to be equally workable and of the same color; is that right?

A. That is right.

Q. All right; continue.

A. "Core stuck on the second after powdering." That means that the second core stuck after powdering; cores first and two were powdered. The cores stuck [650] on the second after powdering.

Q. Now, let me understand that, Mr. Waller. You

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

say here in the first two lines that the first and second cores were good looking cores. A. Yes.

Q. And if I understand the fourth line of this note, it is that the second core stuck.

A. "Core stuck on second after powdering."

Q. Stuck on second what? Is that the second core or the second make of cores?

A. I would say that means on the second attempt after it was powdered.

Q. When you were making up these cores, Mr. Waller, did you make up a given number of cores, say eight cores or ten cores in one group?

A. Sometimes we did and sometimes we didn't.

Q. What I am trying to get at, could this mean that you made a second batch of cores that stuck?

A. No, that doesn't mean a second batch; that means the second core.

Q. In number, not the series?

A. That is right.

Q. Is that the same core as is referred to as the second core in the first line of your note?

A. No, I don't think it does: "Core stuck on second after powder."

Q. Can you explain that?

A. There was unquestionably a sticking there after the second core was made.

Q. In other words, the third core stuck?

A. No, I would say after the second was made. The first core—the first and second they used Lacpodium, and the workability, color, etcetera, was

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

similar, and the core stuck on the second after powdering—that is the second core.

Q. Mr. Waller, will you look at this memorandum that I hand you and see if you can identify it—a typewritten memorandum (handing paper to witness).

A. Yes, that is my report. [651]

Q. When was this report prepared that you have just handed to me? A. When was it made?

Q. Yes.

A. June—June 10—probably June 11.

Q. Does it have——

A. Referring to these notes here which were put in a report from me.

Q. You mean referring to Waller Exhibit 1?

A. Exhibit 1, dated June 10.

Q. Do I understand that you dictated the memorandum which you have just handed to me from the notes Waller Exhibit 1?

A. I don't know whether I dictated it or whether I wrote it.

Q. You prepared it?

A. I was responsible for it.

Q. You will notice that the language of the report which you have handed to me is somewhat different, at least in some respects, than the language of the corresponding items on Waller Exhibit 1.

A. That is right; but anybody who makes notes has the privilege of interpreting those notes in their

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

formal report. This was for my guidance (indicating) in making this (indicating).

Q. That is what I understand, and that is what I would assume. I couldn't understand, though, whether you were telling me that this was and purported to be a copy of Waller Exhibit 1 or not, I couldn't conceive of that being true.

A. I don't think I said that.

Q. Well, I couldn't tell from your statement. I assume that it is not correct.

Mr. Hackley: I offer the notes identified by the witness as having been prepared by him using as a foundation Waller Exhibit 1, as Waller Exhibit 2.

(The document was marked "Waller Exhibit No. 2.")

Mr. Hackley: Q. Will you note before we go any further on [653] this matter, that in the second paragraph under "Procedure" there is a change in the typewriting. The emulsified asphalt which is referred to as twenty-five per cent with a penciled period, has been modified so that it reads 2.5 per cent, to correspond with Waller Exhibit 1 on the same item.

A. Yes, I noticed that. And this is obviously a typographical error.

Q. I would assume so. The correct figure is the penciled notation 2.5 per cent on Waller Exhibit 2?

A. That is correct.

Q. We will therefore regard 2.5 per cent as the correct figure throughout our examination. Now,

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Mr. Waller, with reference to the question of core sticking and identifying the cores that did or did not stick, will you examine your discussion in the notes in Waller Exhibit 2 of solution No. 7 and see if that helps to identify what you meant when you said, "Core stuck on second after powdering," in the fourth line of Waller Exhibit 1.

A. What do you want me to do?

Q. Can you tell from Waller Exhibit 2 which core stuck?

A. I don't understand your question.

Q. Well, I would like to know if any of the cores made with Core-Min-Oil, which I understand was used to perform the seventh of these tests referred to in Waller Exhibits 1 and 2, stuck in the core box.

A. This is what happened: The core stuck after the second had been made.

Q. Which core? A. Which core?

Q. Yes. You made a number of cores. Now, which ones stuck?

A. After the second had been made. It would be the core after the second had been made.

Q. That would be the third core? A. Yes.

Q. How about the fourth or the fifth? [653]

A. Third, fourth, fifth, sixth, seventh and eighth stuck.

Q. You referred in doing that to Waller Exhibit 1 and your penciled notes, but I note that in referring to 3, 4, 5, 6 and 7, you have the numerals "o.k."

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. Excuse, me. Excuse me; that has got a bracket in there, "o.k." I didn't notice that. The eighth stuck.

Q. I will tell you this, Mr. Waller: In reading that without knowing what you meant, it was my understanding from those notes that the eighth core stuck; at least, that was my conclusion. Is that correct?

A. Yes, the eighth core stuck. It definitely says so.

Q. Then, are we to conclude—and I assume this may be correct—in Waller Exhibit 2 where you say, "Core stuck in cope on 6th made," that this "6th" should be "8th" and is a typographical error? I might say your counsel and I have discussed that possibility and it appears to us to be possible that that is true.

A. In the face of this, I would say that it is a typographical error.

Mr. Hackley: I suggest that we note a correction on there, to simplify this record, Mr. Aurich.

Mr. Aurich: That is satisfactory to me.

Mr. Hackley: Q. Will you change that "6" to "8," Mr. Waller?

A. (The witness wrote upon the exhibit.)

Mr. Hackley: We will draw a line through the 6. I have changed that to read "8th" underneath instead of "6th" on top, Mr. Waller.

A. That is right.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. That is in Waller Exhibit 2, the second line referring to solution No. 7? A. That is right.

Q. Did more than one core stick out of those eight cores? You [654] can examine both sets of notes, Exhibit 1 and Exhibit 2, for that purpose. I am not trying to trap you, Mr. Waller; I am trying to get these facts. Notes are cryptic, as you know.

A. Yes, there were two cores that stuck.

Q. What was the other one that stuck? The eighth core stuck. What other one stuck, Mr. Waller?

A. "Core stuck after second had been made."

Q. What one after the second stuck? The third?

A. No, we threw that one out.

Q. The whole core?

A. Yes, you can't make a casting out of a damaged core. That was thrown out.

Q. But that core that you threw out stuck, as you state in this note here, "Due to dried material from previous cores."

A. That is the notation. That is correct.

Q. That is correct. Do I understand from that that there were some remains of previous cores in the core box?

A. A little gummy sand nearly always remains in the core box; you can't get it theoretically polished.

Q. And you attributed, I would assume from your report there, the sticking of the cores after the

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

second in the first batch to the presence of those foreign materials in the core box?

A. That was my notation at the time.

Q. That is the correct interpretation of it, is it, Mr. Waller? A. That is right.

Q. But out of the cores made with clean core boxes, only one stuck, and that was core No. 8; is that correct?

A. No core stuck after the second had been made. It was thrown away.

Q. You threw the whole batch out then?

A. No, we threw that core out. [655]

Q. That one core? A. Yes.

Q. And went ahead with the core box and made up an additional number to a total of eight?

A. We continued on and made up an additional number. That one was thrown out that stuck. Any that stuck were no good to us. Therefore, they were thrown out and we noted the number in sequence in which it was in the notation.

Q. Then you made really nine cores in all, is that correct, in test No. 7?

A. If that is what the Exhibit 1 says, that is what we did. I don't recall now.

Q. Will you examine Exhibit 1 and see?

A. No, eight cores were not made of each, according to these notes.

Q. How many cores were made in test No. 7?

A. Seven cores were kept.

